Compliments of
B. F. Bush

UNIVERSITY OF ILLINOIS
URBANA

The Missouri Muhlenbergias.

BY BENJAMIN FRANKLIN BUSH.

Any one in recent years attempting to name specimens of MUHLENBERGIA by the books, must have been struck by the wide difference of opinion in the presentation of the species in the Robinson and Fernald Gray's New Manual, and the Britton and Brown Illustrated Flora. This difference of opinion in treating the species of this genus in some cases is so marked as to cause one to wonder if there is not something wrong with our understanding of the species. This difference of opinion is most marked with the members of the *Mexicana* group, a most perplexing and critical one, the species of which present so many variations in culms, leaves and floral characters.

It was formerly thought that the species of this, and those of the *Acroxis* group, were either awned or awnless, this belief causing much confusion in the treatment of the species and the naming of specimens: but it began to be suspected that those species which were habitually awnless sometimes presented awned forms, and those species that were ordinarily awned, sometimes presented awnless forms. This suspicion was first voiced by Scribner,[1] who announced that M. MEXICANA and M. SOBOLIFERA often or occasionally presented awned forms, and he went so far as to describe awned forms of these species,[2] and noted that M. TENUIFLORA and M. TORREYI were occasionally awnless.

My conclusions after a careful examination of several hundred sheets of specimens, are, that Scribner was correct in the main, but that what he took to be awned forms or varieties of M. MEXICANA and M. SOBOLIFERA are really good distinct species, which I herein propose as new.

[1] Scribner, Rhodora 9:18. 1907. [2] Scribner, Rhodora 9:18. 1907.

Hitchcock in the Robinson and Fernald Gray's New Manual in 1908, presented ten species and one variety for the territory commonly embraced in the Manual region, presenting M. FOLIOSA Trinius, for the first time, this having been previously restored by Scribner,[1] and to it he referred M. AMBIGUA Torrey, which I am inclined to think is a good species. M. MEXICANA is there said to have the culms retrorsely strigose below the nodes, and to have the lemmas acuminate or awned, thus including the M. MEXICANA COMMUTATA of Scribner in his description. It appears to me much better to consider Scribner's variety a distinct species, and thus relieve the real M. MEXICANA of much uncertainty. Hitchcock also includes M. POLYSTACHYA of Mackenzie and Bush in M. MEXICANA, which after an examination of a number of specimens I still consider distinct from that species. He reduces M. PALUSTRIS to a variety of M. SCHREBERI, a disposition once made by Scribner,[2] but it seems more natural to keep this distinct from that species. The description of M. SCHREBERI is so drawn as to include M. SCHREBERI CURTISETOSA of Scribner, which seems to me to be sufficiently distinct to recognize as a species. M. GLABRIFLORA of Scribner is not mentioned in the Manual, Hitchcock evidently not understanding this species.

Nash in the Britton and Brown Illustrated Flora, second edition, in 1913, presents eleven species, ten of these given by Hitchcock in the Manual, and one other, M. AMBIGUA Torrey. In the treatment of the species in this work, Nash gives specific rank to M. PALUSTRIS and M. AMBIGUA, refers M. FOLIOSA of Trinius to M. MEXICANA, ignores M. POLYSTACHYA of Mackenzie and Bush, and M. SCHREBERI CURTISETOSA, and briefly mentions M. GLABRIFLORA which seems to me to be an excellent species. In his description of the MEXICANA group, Nash does not speak of the retrorsely scabrous character of the culms just below the nodes of some of the species, evidently thinking this character not worthy of mention.

Many years ago Prof. Dewey wrote the account of the Grasses for the Manual of the Plants of Western Texas,[3] in which the ranges of some of our species is given, no doubt based on specimens in the Herbarium of the Department of Agriculture. The ranges given of several of our species in this work has been modified largely by

[1] Scribner, Rhodora 9:18. 1907. [2] Scribner, Rhodora 9:18. 1907.
[3] Dewey, Man. of the Plants of Western Texas, 1892.

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numerous collections and critical study of several species. Prior to 1905, several of the species now included in the genus MUHLENBERGIA, were included in the genus *Sporobolus*, when Dr. Rydberg[1] transferred some of the species to this genus. These species seem to me to be intermediate between MUHLENBERGIA and *Sporobolus*, and could with equal propriety be included in the genus *Sporobolus* or in MUHLENBERGIA, but I leave these species in MUHLENBERGIA as placed there by Dr. Rydberg. But there is a group of species having single, terminal panicles with flowers on long capillary pedicels, the type of which is *Stipa capillaris* Lamarck, that seems to me to be very distinct from the other species commonly included in the genus MUHLENBERGIA. This group of species is so distinct from the other species of MUHLENBERGIA in rootstocks, ligules, panicles, flowers and habit, that I think there is no doubt that they are certainly distinct from that genus. The earliest available name for this group of species seems to be PODOSEMUM Desvaux, in Nouv. Bull. Soc. Philom. 2:188. 1810, where the genus is established and *Stipa capillaris* Lamarck is cited as the type. The genus is more fully described in Beauvois Agrost. 29, 1812.

I have therefore decided to follow Desvaux in placing some of the species formerly included in the genus MUHLENBERGIA in the genus PODOSEMUM, but present the single species occurring in the State along with the other species of MUHLENBERGIA, to which it has generally been referred.

In this, my presentation of the Missouri species, I differ somewhat from the treatment of both Hitchcock and Nash, in the works mentioned above, and have more nearly agreed with Scribner in recognizing the species, and have been compelled to describe one new species, being unable to refer the specimens to any described species.

I have seen nearly all the Missouri material in existence of the species of MUHLENBERGIA, through the kindness of Dr. J. M. Greenman, curator of the Missouri Botanical Garden Herbarium, Prof. A. S. Hitchcock, Agrostologist in charge of the Grasses in the United States National Museum Herbarium, Prof. Wm. Trelease of the University of Illinois, Dr. J. A. Nieuwland of the University of Notre Dame, and Mr. Kenneth K. Mackenzie of East Orange, New Jersey, to whom I am under many obligations;

[1] Rydberg, Bull. Torr. Club, 32:1905.

to Prof. Hitchcock and Dr. George T. Moore of the Missouri Botanical Garden, I am under obligations for numerous citations furnished and for verifications of publications; to all of the above I herein return thanks for the many courtesies extended.

For the Missouri species now included, or were formerly included, in the genus MUHLENBERGIA, I offer the following:

KEY TO THE MISSOURI MUHLENBERGIAS.

Panicles contracted, narrow, often numerous, often slender, the branches short, erect or appressed; ligules usually short or minute. 1. MUHLENBERGIA.

Panicles open, single, terminal, very large, their branches long and spreading, slender, the pedicels hair-like, drooping; ligules elongated; lemmas with long awns. 2. PODOSEMUM.

1. MUHLENBERGIA SCHREBER; Gmelin, Syst. Nat. 2:171. 1791.

A genus of about 30 species, mostly American, a few Asiatic, divisible into several rather well-marked groups, the type-species MUHLENBERGIA SCHREBERI Gmelin. As here treated, the species naturally fall into four groups or sections as follows:

Glumes wanting, minute or very short, or in one species a little longer, blunt or obtuse or in one species acuminate; plants decumbent at the base, from weak or slender rootstocks; lemmas usually long-awned or in one species rather short-awned.

A. MUHLENBERGIA proper.

Glumes broad, ovate, acute, much shorter than the lemmas; lemmas acute or awned; rootstocks stout, scaly.

B. STENOCLADIUM section.

Glumes narrow, acuminate or aristate, nearly as long as or exceeding the lemmas in length; rootstocks stout, scaly.

C. ACROXIS section.

Glumes broad, cuspidate; panicle very much contracted, narrow; plants without rootstocks.

D. EUCLADIUM section.

A. MUHLENBERGIA proper.

Glumes less than one-fourth the length of the spikelets, minute or wanting, blunt or obtuse; lemmas with awns 3-5mm. long; rootstocks rather weak. 1. MUHLENBERGIA SCHREBERI.

Glumes one-fourth to one-half as long as the spikelets, ovate-acuminate; lemmas with awns 1-2 mm. long; rootstocks much stouter. 2. MUHLENBERGIA CURTISETOSA.

B. STENOCLADIUM section.

1. Spikelets 1.5-2mm. long; lemmas awnless; infranodes[1] minutely scabrous just below the glabrous nodes; glumes two-thirds to three-fourths as long as the scabrous lemmas, ovate to broadly lanceolate, cuspidate. 3. MUHLENBERGIA SOBOLIFERA.

1. Spikelets 2.5-4mm. long; lemmas awned or rarely awnless; glumes lanceolate or broadly lanceolate. 2.

2. Spikelets 2.5-3mm. long; infranodes glabrous; nodes glabrous; culms low, much-branched; panicles numerous, upper usually short-exserted; awns 3-4mm. long.
4. MUHLENBERGIA BRACHYPHYLLA.

2. Spikelets 3-4mm. long; infranodes retrorsely pubescent; nodes pubescent; culms usually tall, little branched; panicles usually few, usually long-exserted; glumes very broad, ovate-lanceolate, cuspidate, scabrous, clasping, one-half to two thirds as long as the scabrous slender lemmas; lemmas usually with long awns, rarely awn-pointed or awnless; awns 5-10mm. long.
5. MUHLENBERGIA TENUIFLORA.

C. ACROXIS section.

1. Glumes much exceeding the lemmas, generally twice as long, about 5mm. long, awned-acuminate; lemmas acuminate-attenuate.
6. MUHLENBERGIA RACEMOSA.

1. Glumes about as long as the lemmas, or slightly longer, or mostly a little shorter, less than 5mm. long, glabrous or rarely slightly scabrous. 2.

2. Panicles ovoid or subpyramidal, or sometimes linear, numerous, short-exserted, or partially included in the upper sheaths not dense nor glomerate-flowered. 3.

2. Panicles oblong or cylindrical, or sometimes linear, more or less glomerate, or sometimes loosely flowered. 5.

3. Panicles numerous, rather long, more or less open; lemmas long-awned. 7. MUHLENBERGIA COMMUTATA.

[1] The term infranode is here employed to designate that portion of the culm just below the node, corresponding to the upper part of the internode.

3. Panicles numerous, rather short, somewhat dense or more or less open; lemmas not awned. 4.

4. Panicles numerous, rather short, more or less dense; lemmas not awned, perfectly glabrous. 8. MUHLENBERGIA GLABRIFLORA

4. Panicles numerous, more or less open, often slender; lemmas not awned, pubescent at the base; infranodes perfectly smooth; nodes glabrous. 9. MUHLENBERGIA MEXICANA.

5. Panicles few, short, dense, glomerate, oblong or cylindrical; flowers usually purplish; lemmas awn-pointed or somewhat aristate; glumes mucronate or aristate, subequal; infranodes retrorsely scabrous: nodes glabrous.

10. MUHLENBERGIA FOLIOSA.

5. Panicles numerous or sometimes fewer, filiform, linear or oblong, dense or rather loose. 6.

6. Panicles usually few, usually short-exserted, linear or filiform; infranodes retrorsely scabrous; nodes glabrous; flowers not crowded, in rather long, erect branches, usually green or stramineous; spikelets 2.5-3mm. long; lemmas usually long-awned, or rarely awnless. 11. MUHLENBERGIA TORREYI.

6. Panicles numerous, dense, slender, elongated, usually long-exserted; infranodes minutely scabrous or nearly glabrous; lemmas acuminate, rarely awned, villous with very long hairs at the base; spikelets 2-2.5mm. long. 12. MUHLENBERGIA POLYSTACHYA.

D. EUCLADIUM section nova.

Culms strictly erect, not rooting at the lower nodes, minutely retrorsely puberulent; glumes broad, one-half as long as the spikelet or more, acuminate or cuspidate; lemmas awnless, long-acuminate or cuspidate; no creeping scaly rootstocks; panicles slender, the branches appressed. 13. MUHLENBERGIA CUSPIDATA.

1. MUHLENBERGIA SCHREBERI J. F. Gmelin, Syst. Nat. 2:171. 1791.

Muhlenbergia diffusa Willd. Sp. Pl. 1:320. 1798.

Dilepyrum minutiflorum Michx. Fl. Bor. Am. 1:40. 1803.

Muhlenbergia diffusa Schreber, Gram. 2:143, 1810.

Muhlenbergia diffusa Schreb., Bush in Flora of Jackson County, Missouri, No. 864, 1885; Tracy in Flora of Missouri, No 1641, 1886; Eggert in Catalogue of Plants of Saint Louis, Missouri, 1891; Daniels in Flora of Columbia, Missouri, No. 75, 1907; Palmer in

Catalogue of Plants of Jasper County, Missouri, Nos. 988, 990 and 3488, 1916.

Muhlenbergia diffusa Willd., Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, No. 6, 1902.

Muhlenbergia Schreberi J. F. Gmelin, Palmer in Catalogue of Plants of Jasper County, Missouri, Nos. 1376, 2646 and 2894, 1916.

Northern Texas and northward, Dewey in Manual of the Plants of Western Texas.

Me. to Ont. Minn. and southward, Hitchcock in Manual.

Me. and southern Ontario to Minn. Fla. Kans. and Texas, Nash in Flora.

Me. to Minn. south to Fla. and Texas, Nash in Illustrated Flora.

Massachusetts to Nebraska, south to Florida, Texas and Mexico.

SPECIMENS EXAMINED:

MASSACHUSETTS:

Amherst, *Girard* 40, 1872, M. B. G. Herb. No. 80109;
Farmington, *Smith*, September, 1897, M. B. G. Herb. No 79741.

NEW YORK:

Buffalo, *Clinton*, date not given, M. B. G. Herb. N. 79859;
Pennyan, *Sartwell*, date not given, M. B. G. Herb. No. 79625, the plant marked 1 on this sheet;
Pennyan, *Sartwell*, date not given, M. B. G. Herb. No. 79582, the plant marked 1 on this sheet.

NEW JERSEY:

Hoboken, collector and date not given, M. B. G. Herb. No. 79991;
Hoboken, collector and date not given, M. B. G. Herb. No. 79989;
Hoboken, collector and date not given, M. B. G. Herb. No. 79974;
Hoboken, collector and date not given, M. B. G. Herb. No. 79889;
Pemberton, *Willmarth*, August 25, 1876, U. S. Herb.;
Without definite locality, *Digyn*, date not given, M. B. G. Herb. No. 79974.

PENNSYLVANIA:

Manayunk, *Redfield*, September 19, 1870, M. B. G. Herb. No. 79858;

Philadelphia, *Digyn*, date not given, M. B. G. Herb. No. 79887;

Philadelphia, *Scribner* 313, October, 1881, U. Ill. Herb.;

Stoneroad's Mill, *Keller*, October 5, 1901, M. B. G. Herb. No. 79868;

West Chester, *W. D.*, date not given, M. B. G. Herb. No. 79773;

Without definite locality, *Sartwell*, date not given. M. B. G. Herb. No. 79776;

York County, *Glatfelter*, September, 1899, M. B. G. Herb. No. 80096;

MARYLAND:

Chevy Chase, *Mosher*, September 15, 1915, U. Ill. Herb.;

Harper's Ferry, *Holm*, October 6, 1912, M. B. G. Herb. No. 779204.

DISTRICT OF COLUMBIA:

Great Falls of the Potomac, *Holm*, October, 1913, U. Ill. Herb.; Pine Branch, Ball 54, August 25, 1909, M. B. G. Herb. No. 79872.

OHIO:

Cincinnati, *Lloyd* 575, September 9, 1890, M. B. G. Herb. No. 79885.

VIRGINIA:

Loudoun County, *Helms*, August, 1888, U. Ill. Herb.;

Munden, *Mackenzie* 1764, September 3-19, 1905, M. B. G. Herb. No. 79843.;

TENNESSEE;

Knoxville, *Ruth* 59, September, 1898, M. B. G. Herb. No 79867.

KENTUCKY:

Bowling Green, *Price*, June 1890, M. B. G. Herb. No. 79847;

Bowling Green, *Price*, May, 1897, M. B. G. Herb. No. 79846.

Wasiota, *Kearney* 383, September, 1893, M. B. G. Herb. No. 79992.

ILLINOIS:

Lisle, *Umbach*, July 4, 1896, M. B. G. Herb. No. 80090;
Mascoutah, *Welsch*, 1862-1871, U. Ill. Herb.;
Mount Carmel, *Schneck*, September 15, 1904, U. Ill. Herb.;
Peoria, *Brendel*, date not given, U. Ill. Herb.;
St. Clair County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 739941;
St. Clair County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 739683.
St. Clair County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 739391;
St. Clair County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 79851;
St. Clair County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 79841;
St. Clair County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 79854;
Taylorville, *Andrews*, August 28, 1898, U. Ill. Herb;
Urbana, *Gibbs*, September 26, 1898, U. Ill. Herb;
Urbana, *G. P. C.* October 1, 1895, U. Ill. Herb:
Urbana, *Seymour*, September 28, 1880, U. Ill. Herb.
Wabash County, *Schneck*, July, 1900, U. Ill, Herb;
Wabash County, *Schneck*, date not given, U. Ill. Herb.;
Wady Petra, *Chase* 1165, September 25, 1904, U. Ill. Herb.;
Wady Petra, *Chase* 1270, September 23, 1906, U. Ill. Herb.;
Wady Petra, *Chase* 1277, October 7, 1906, U. Ill. Herb.;
Wady Petra, *Chase* 682, October 7, 1906, M. B. G. Herb. No. 80128.

MISSOURI:

Aberdeen, *Davis* 1147, September 24, 1911, M. B. G. Herb. No. 709388;
Allenton, *Letterman*, August 30, 1892, M. B. G. Herb. No. 709388;
Campbell, *Bush*, September 11, 1893, M. B. G. Herb. No. 772800
Carterville, *Palmer* 1984, July 8, 1901, M. B. G. Herb. No. 757390;
Carthage, *Trelease*, September 18, 1998, M. B. G. Herb. No. 79864;

Cedar County, *Trelease*, July 30, 1897 M. B. G. Herb. No. 79862;
Clayton, *Letterman*, date not given, M. B. G. Herb. No 796012;
Cliff Cave, *Kellogg* 30, October 10, 1901, U. S. Herb. No. 950188;
Cliff Cave, *Kellogg*, October 10, 1901, M. B. G. Herb. No. 79798;
Congo, *Hoffman*, October 10, 1916;
Dodson, *Hoffman*, September 13, 1916;
Dunklin County, *Trelease*, August 20, 1897, M. B. G. Herb. No. 79861;
Eolia, *Davis* 1435, October 23, 1911, U. S. Herb. No. 674025;
Eolia, *Davis* 1435, October 23, 1911, M. B. G. Herb. No 709445;
Forest Park, *Eggert*, September 21, 1875, M. B. G. Herb. No. 79855;
Galena, *Palmer* 6481, October 16, 1913, M. B. G. Herb. No. 717420;
Galloway, *Standley* 9345, August 26, 1912, U. S. Herb. No. 688260;
Greene County *Blankinship* 2821, July 29, 1889, M. B. G. Herb, No. 80047;
Indian Hill, *Trelease*, September 28, 1897, M. B. G. Herb. No. 79863;
Jackson County, *Bush*, September 27, 1893, M. B. G. Herb. No. 80049;
Jefferson County, *Eggert*, September 9, 1896, M. B. G. Herb. No. 79849;
Jerome, *Kellogg*, 184, October 1, 1913, M. B. G. Herb. No. 719727;
Martin City, *Mackenzie* 482, September 18, 1901;
McDonald County, *Bush* September 1, 1893, M. B. G. Herb. No. 80046;
Monteer, *Bush* 4888, October 10, 1907, M. B. G. Herb. No. 79831;
Oronogo, *Palmer*, 988, September 15, 1907, M. B. G. Herb. No. 757385;
Oronogo, *Palmer* 988, September 15, 1907, M. B. G. Herb. No. 79828;

Prosperity, *Palmer* 990, August 20, 1907, M. B. G. Herb. No. 757389;
Prosperity, *Palmer* 990, August 20, 1907, M. B. G. Herb. No. 79827;
Silica, *Eggert*, September 15, 1891, M. B. G. Herb. No. 79851;
South St. Louis, *Kellogg*, September 7, 1900, M. B. G. Herb. No. 79877;
Springfield, *Standley*, 9728, August 31, 1912, U. S. Herb. No. 688645;
St. Louis, *Eggert*, October, 1875, M. B. G. Herb. No. 82696;
St. Louis *Engelmann*, August 1841,, M. B. G. Herb. No. 79688;
St. Louis, *Glattelter*, date not given, M. B. G. Herb. No. 80060;
St. Louis, *Pammel*, October, 1886, M. B. G. Herb. No 79842;
Stone County *Trelease*, September 10, 1898, M. B. G. Herb. No. 79865;
Sugar Creek, *Mackenzie*, September 6, 1896;
Swan, *Bush*, 380, September 24, 1899, M. B. G. Herb. No. 79857;
Thornton, *Mackenzie* 656, October 18, 1901, M. B. G. No. 79865;
Turner, *Standley* 8794, September 4, 1912, U. S. Herb. No. 687669;
Webb City, *Palmer* 1376, June 7, 1908, M. B. G. Herb. No. 757388;
Webb City, *Palmer* 2646, September 8, 1909, M. B. G. Herb. No. 80063;
Webb City, *Palmer* 2646, September 8, 1909, M. B. G. Herb. No. 757391;
Webb City, *Palmer* 3488, October 7, 1911, M. B. G. Herb. No. 709005;
Webb City, *Palmer* 3488, October 7, 1911, M. B. G. Herb. No. 757386;
Whiteside, *Davis* 28, September 12, 1911 M. B. G. Herb. No. 765895;
Whiteside, *Davis* 1008, September 12, 1911 M. B. G. Herb. No. 673927;

Whiteside, *Davis* 1008, September 12, 1911, M. B. G Herb. No. 709063;

North Carolina:

Aiken, *Ravenel*, September, 1866, M. B. G. Herb. No. 79691.

Iowa:

Ames, *Pammel* 73, August, 1909, M. B. G. Herb. No. 80074;

Clinton, *Pammel* 247, September 4, 1896, M. B. G. Herb. No. 79980;

Clinton, *Pammel* 247, September 4, 1896, M. B. G. Herb. No. 79850;

College Park, *Johnson*, October 1898, M. B. G. Herb. No. 79884;

Columbus Junction, *Pammel* 1502, date not given ,M. B. G. Herb. No. 79876;

Des Moines, *Pammel* 653, July 14, 1897, M. B. G. Herb. No. 79848;

DeWitt, *Pammel* 1455, September 9, 1898, M. B. G. Herb. No. 79874;

Dixon, *Snyder* 735, September 23, 1897, M. B. G. Herb. No 79882;

Iowa City, *Hitchcock*, 1888, M. B. G. Herb. No. 79879;

Iowa City, *Hitchcock*, date not given, M. B. G. Herb. No. 79983;

Iowa City, *Hitchcock*, date not given, M. B. G. Herb. No 79982;

Iowa City, *Hitchcock*, date not given, M. B. G. Herb. No. 79746;

Mount Ayr, *Beard* 642, September 25, 1907, M. B. G. Herb. No. 79722;

Mount Pleasant, *Witte* 993, October 1, 1897, M. B. G. Herb. No. 79881;

Muscatine, *Mackenzie* 749, September 10, 1894.

Nebraska:

Bellevue, *Hayden*, July, 1853-54, M. B. G. Herb. No. 79690;

Georgia:

Leslie, *Harper* 1716, October 7, 1902, M. B. G. Herb. No. 79869;

The Missouri Muhlenbergias.---II.

BY BENJAMIN FRANKLIN BUSH.

KANSAS:

Manhattan, *Kellerman*, September 25, 1885, M. B. G. Herb. No. 79969;

Manhattan, *Kellerman*, September 25, 1885, M. B. G. Herb. No. 79977;

Manhattan, *Kellerman*, September 16, 1888, M. B. G. Herb. No. 79984;

Wyandotte, *Mackenzie*, October 3, 1897.

ALABAMA:

Cullman, *Eggert*, September 15, 1897, M. B. G. Herb. No. 79853.

FLORIDA:

Apalachicola, *Chapman*, date not given, M. B. G. Herb. No. 785588;

MISSISSIPPI:

Biloxi, *Tracy*, September 1, 1899;

Panola, *Eggert*, September 17, 1896, M. B. G. Herb. No. 79732;

Panola, *Eggert*, September 17, 1876, M. B. G. Herb. No. 79728;

Starkville, *Kearney*, 16, September 27, 1896, M. B. G. Herb. No. 79979;

Starkville, *Tracy*, July 18, 1888, M. B. G. Herb. No. 79981.

LOUISIANA:

Feliciana, *Mohr*, September, U. S. Herb. No. 722798;

Natchitoches, *Palmer* 6774, October 1, 1915, M. B. G. Herb. No. 794768.

Pages 17–28, Am. Mid. Nat. Vol. VI. No. 2, March, 1919.
Pages 33–49, Am. Mid. Nat. Vol. VI. Nos. 3, 4, May–July, 1919.

ARKANSAS:

Benton County, *Plank*, Summer, 1900, M. B. G. Herb. Herb. No. 82685;

Fulton, *Bush* 897, September 18, 1900 M. B. G. Herb. No. 79870;

Texarkana, *Heller* 4161, August 27, 1898, M. B. G. Her. Herb. No. 79883;

OKLAHOMA:

Verdigris, *Bush* 768, August 2, 1894, M. B. G. Herb. No. 79970.

TEXAS:

Columbia, *Bush* 1461, October 12, 1900, M. B. G. Herb. No. 79871;

Dallas, *Reverchon* 661, 1873, M. B. G. Herb. No. 79612;

Dallas, *Reverchon* 2252, October 5, 1900, M. B. G. Herb. No. 79845;

Dallas, *Reverchon* 4207A, 1881, M. B. G. Herb. No 79844;

Elmo, *Reverchon* 3532, October 22, 1902, M. B. G. Herb. No. 79894;

Elmo, *Reverchon* 3538, October 22, 1902, M. B. G. Herb. No. 79860;

Elmo, *Reverchon* 3538, October 22, 1902, M. B. G. Herb. No. 79892;

Galveston Bay, *Joor*, October 19, 1884, M. B. G. Herb. No. 79856;

Houston, *Lindheimer*, September, 1841, M. B. G. Herb. No. 79693;

Industry, *Wurzlow*, 1891, U. Ill. Herb.;

Kerrville, *Hitchcock* 5315, June 22, 1910, U. Ill. Herb.; October 9, 1901, M. B. G. Herb. No. 75877;

Marshall, *Bush* 1011,

Palestine, *Joor*, October 21, 1884, M. B. G. Herb. No. 79870;

Rusk County, *Vinzent* 55, August, M. B. G. Herb. No. 79873;

San Antonio, *Bush* 826, September 18, 1901, M. B. G. Herb. No. 79873;

Without definite locality, *Lindheimer*, date not given, M. B. G. Herb. No. 79990;

Without definite locality, *Reverchon*, date not given, M. B. G. Herb. No. 80105;

Without definite locality, *Reverchon*, date not given, M. B. G. No. 79893;

MEXICO:

Coatepee *Hitchcock* 6663, September 2-4, 1910, U. Ill. Herb.

2. MUHLENBERGIA CURTISETOSA (Scribner) Bush, n. sp.

Muhlenbergia Schreberi curtisetosa, Scribner Rhodora 9:17. 1907.

SPECIMENS EXAMINED:

MISSOURI:

Eagle Rock, *Bush* 377, September 24, 1896, M. B G. Herb. No. 294597.

Eagle Rock, *Bush* 377, September 24, 1896, U. S. Herb. No. 294597;

Eagle Rock, *Mackenzie*, September 24, 1896.

ILLINOIS:

Champaign, *Clinton* 92, date not given, U. S. Herb. No. 952420;

Without definite locality, *Wolf*, 1881, U. S. Herb. No. 952419, TYPE of *Muhlenbergia Schreberi curtisetosa*.

3. MUHLENBERGIA SOBOLIFERA (Muhl.) Trin. Gram. Unifl. 189, 1824.

Agrostis sobolifera Muhl.; Willd. Enum. 95. 1809.

Trichochloa sobolifera (Muhl.) Trin. Fund. Agrost. 117. 1820.

Muhlenbergia sobolifera Trin., Bush in Flora of Jackson County, Missouri, No. 860, 1885; Tracy in Flora of Missouri, No. 1645, 1886; Eggert in Catalogue of Plants of Saint Louis, Missouri, 1891.

Muhlenbergia sobolifera (Muhl.) Trin., Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, No. 1, 1902; Daniels in Flora of Columbia, Missouri, No. 70, 1907; Palmer in Catalogue of Plants of Jasper County, Missouri, Nos. 753, 856, 858, 1375, 2529, 2617, 2546, 3463, 3467 and 3475, 1916.

Northern Texas and northward, according to Dewey in Manual, l. c., referring of course to *M. setigera* q. v.

N. E. to Minn. and southward, according to Hitchcock in Manual.

N. H. and Mass. to Minn. Va. Tenn. and the Ind. Terr., according to Nash in Flora.

N. W. to Minn. south to Va. Tenn. and the Ind. Terr., according to Nash in Illustrated Flora.

From New York and New Jersey to Nebraska, Missouri, Kansas and Northern Arkansas.

SPECIMENS EXAMINED:

NEW YORK:

Ithaca, *Rowlee*, 1889, M. B. G. Herb. No. 79759;
Pennyan, *Sartwell*, date not given, M. B. G. Herb. No. 79629;
Western New York, *Gray*, date not given, M. B. G. Herb. No. 79627.

PENNSYLVANIA:

Chester County, *Canby*, 1865, M. B. G. Herb, No 79751;
Conewago, *Heller* 4792, September 27, 1907, M. B. G. Herb. No. 79758.

MARYLAND:

Harper's Ferry, *Holm*, June 10, 1912, U. Ill. Herb.;
Harper's Ferry, *Holm*, June 10, 1912, M. B. G. Herb. No. 779176.

DISTRICT OF COLUMBIA:

Washington, *Ball and Paddock* 26, August 7, 1899, M. B. G. Herb. No 79767.

ILLINOIS:

Belleville, *Engelmann*, August, 1833, M. B. G. Herb. No. 79660, the plant marked 2 on this sheet;
Centerville, *Eggert*, August 31, 1877, M. B. G. Herb. No 79752;
Centerville, *Eggert*, August 31, 1877, M. B. G. Herb. No 79753;
Centerville, *Eggert*, August 31, 1877, M. B. G. Herb. No. 79754;
Centerville, *Eggert*, August, 31, 1877, M. B. G. No. 79834;
Centerville, *Eggert*, August 31, 1877, M. B. G. Herb. No. 767046;
Mount Carmel, *Schneck*, October 20, 1881, U. Ill. Herb.;
Peoria, *Brendel*, date not given, U. Ill. Herb.;
Peoria, *McDonald*, August, 1888, M. B. G. Herb. No. 773046;
Taylorville, *Andrews*, August 20, 1898, U. Ill. Herb.;
Taylorville, *Andrews*, August 26, 1898, U. Ill. Herb.;
Wabash County, *Schneck*, July 1, 1879, U. Ill. Herb., the plant marked B on this sheet;
Wabash County, *Schneck*, September 1, 1879, U. Ill. Herb.;
Wabash County, *Schneck*, September 6, 1879, U. Ill. Herb.;
Wabash Conty, *Schneck*, August 17, 1880, U. Ill. Herb.

MISSOURI:

Allenton, *Letterman*, August, 1876, M. B. G. Herb. No. 772801;
Allenton, *Letterman*, August, 1893, M. B. G. Herb. No. 772803;
Bagnell, *Trelease*, September 22, 1897, M. B. G. Herb. No.79765

Bagnell, *Trelease*, September 18, 1897, M. B. G. Herb. No. 79760;
Big Bend of the Meramec, *Glatfelter*, September 15, 1891, M. B. G. Herb. No. 80064;
Cliff Cave, *Kellogg* 32, October 10, 1901, M. B. G. Herb No. 79800;
Cliff Cave, *Kellogg*, October 10, 1901, M. B. G. Herb. No. 950200;
Current River, Carter County, *Trelease*, September 10, 1897, M. B. G. Herb. No. 79763;
Dodson, *Bush* 1868, August 24, 1903, M. B. G. Herb. No. 79755;
Dodson, *Bush* 1868, August 24, 1903, M. B. G. Herb. No. 79756;
Dodson, *Hoffman* 145, September 17, 1916;
Eolia, *Davis* 1440, October 23, 1911, M. B. G. Herb. No. 709440;
Greene County, *Bush* 4814, September 4, 1893, M. B. G. Herb. No. 80038;
Independence, *Bush*, 1884, U. S. Herb. No. 746205;
Jackson County, *Bush*, September 4, 1893, M. B. G. Herb. No. 80040;
Joplin, *Trelease*, October 7, 1897, M. B. G. Herb. No. 79761;
McDonald County, *Bush*, September 1, 1893, M. B. G. Herb. No. 80037.
Meramec Spring, Phelps County, *Trelease*, September 25, 1898, M. B. G. Herb. No. 79764;
Noel, *Palmer* 4176, September 8, 1913, M. B. G. Herb. No. 717316;
Noel, *Palmer* 4254, September 10, 1913, M. B. G. Herb. No. 717317;
Pearl, *Standley* 9230, August 22, 1912, U. S. Herb. No. 688145;
Randolph, *Mackenzie* 370, October 2, 1898;
Sibley, *Bush* 4814, August 31, 1907, M. B. G. Herb No. 78930;
Sulpher Springs, Jefferson County, *Trelease*, October 23, 1898, M. B. G. Herb. No. 79762;
Swope Park, *Mackenzie* 432, September 13, 1901;
Swope Park, *Stigall* 50, September 16, 1906, M. B. G. Herb. No. 80054.

Webb City, *Palmer* 753, July 22, 1906, M. B. G. Herb. No. 8055;

Webb City, *Palmer* 856, July 22, 1906, M. B. G. Herb. No. 756979;

Webb City, *Palmer* 1375, August 4, 1908, M. B. G. Herb. No. 756957;

Webb City, *Palmer* 1375, August 4, 1908, M. B. G. Herb. No. 80056;

Webb City, *Palmer* 2546, July 22, 1909, M. B. G. Herb. No. 757604;

Webb City, *Palmer* 2546, July 22, 1909, .M B. G. Herb. No. 80058;

Webb City, *Palmer* 2549, July 19, 1909, M. B. G. Herb. No. 756956;

Webb City, Palmer 2617, September 2, 1909, M. B. G. Herb. No. 80061;

Wicks, *Kellogg* 31, July 20, 1898, U. S. Herb. No. 709440;

Wicks, *Kellogg* 31, July 20, 1898, M. B. G. Herb. No 79766.

IOWA:

Steamboat Rock, *Pammel, Hume,* and *Fitz* 1346, date not given, U. S. Herb. No. 79771;

Winterset, *Carver* 1928, 1894, M. B. G. Herb. No. 79769;

KANSAS:

Cherokee County, *Hitchcock* 889, 1896, M. B. G. Herb. No. 79636;

Rosedale, *Mackenzie,* July 19, 1896;

NEBRASKA:

Weeping Water, *Williams,* August, 1899, M. B. G. Herb. No. 79628.

ARKANSAS:[1]

Eureka Springs, *Palmer* 4425, September 20, 1913, M. B. G. Herb. No. 716987.

Culms much branched from the base, 3-4 dm. tall, smooth, erect; infranodes slightly strigose below the glabrous nodes, at least the lower; leaves numerous, 5-10 cm. long, 3-5 mm, wide; panicles slender 1-1.5dm. long, the short branches oppressed; spikelets 2-2.5 mm. long, acute, somewhat crowded; glumes broadly ovate, acute or acuminate, one- to two-thirds as long as the floret;

1 MUHLENBERGIA SETIGERA (Scribner) Bush, n. sp.
Muhlenbergia sobolifera setigera Scribner, Rhodora 9:18. 1907.

lemma slender acuminate, hairy-tufted at the base, attenuate into a slender awn 1-5 mm. long.

Differs from *M. sobolifera* in having shorter, much-branched culms, shorter and narrower leaves, shorter and denser panicles, longer and narrower florets which are awned. Was referred by Vasey to *M. sylvatica*, *M. sylvatica, var.*, *M. sobolifera*, *M. sobolifera* var., and *M. Willdenovii*.

Scribner based *M. sobolifera setigera* on Reverchon's 70 and 1054, referring to it also his No. 30, but gives neither dates not localities for the type specimens. Many years ago Reverchon sent to Dr. George Vasey of the Department of Agriculture, specimens of Grasses to be determined, and these were numbered from 1 up, usually marking "Vasey" on his labels.

The specimens of *Muhlenbergia* which I am referring to this new species, which he sent to be named, were reported by Vasey under five names, *M. sylvatica*, *M. sylvaitca* var.—, *M. sobolifera*, *M. sobolifera* var.—, and *M. Willdenovii*. Believing these to be distinct species and varieties, Reverchon numbered one 1049, another 1050 and so on up to 1054, these being the numbers given to these species and varieties in his MS. list of Texas Plants.

But the specimens sent to Dr. Vasey with numbers on the labels, and other numbers bearing the same numbers do not agree, and I feel confident that Reverchon used the same numbers over and over.

I have seen several of Reverchon's No. 70, supposedly part of the No. 70 sent to Vasey, and these are marked *M. sylvatica* var. —, presumably a MS. name of Vasey's, but these do not appear to be the same as that examined by Scribner. I have also examined two sheets of specimens marked 30 by Reverchon, collected at Ferris, Texas, but these differ from the No. 30 examined by Vasey and Scribner, and cited by Scribner as belonging to his *M. sobolifera setigera*, in being short-awned. These Ferris specimens are named *M. sobolifera* var.—presumably a MS. name of Vasey's, and the date of collection is stated as 1884 and 1888, while the one cited by Scribner is said to be dated 1885. One of the Ferris specimens is numbered 1665, which makes it apparent that Reverchon separated this variety from *M. sobolifera*, and assigned it a much later number in his MS. list of Texas Plants.

Having been intimately acquainted with Mr. Reverchon, I learned much about his numbering, the earlier collecting being numbered according to his MS. list, which was arranged in accord-

ance with his collecting. When Reverchon first began collecting plants in Texas, in the seventies, the first species he collected he listed as No. 1, the next No. 2, and so on up to about No. 1884, when I persuaded him to adopt the serial system of numbering, beginning with the last number in his MS. list, and giving each collection a different number.

According to this earlier method of numbering, every species bore the same number, no matter where and when collected, as for instance, *M. sobolifera* was No. 1052, and every collection of what he took to be *M. sobolifera* he gave that number to, no matter where it was collected, in 1878, 1880, 1882 or 1885.

I have also examined one sheet of Reverchon's No. 1054, which is labeled *M. Mexicana* by Reverchon, cited by Scribner as part of the type of *M. sobolifefa setigera*, but this appears to me to be only *M. Mexicana*. It differs from *M. sobolifera setigera* in having the lower glumes acuminate and nearly as long as the lemma, the lemma merely acute or acutish and not awned.

Specimens Examined:

Oklahoma:

Sapulpa, *Bush* 769, July 22, 1894, M. B. G. Herb. No. 79634, labeled *M. sobolifera* by Bush;

Verdigris, *Bush* 770, August 2, 1894, U. S. Herb. No. 217323, labeled *M. sobolfera* by Bush and *M. Mexicana* by Scribner.

Texas:

Dallas, *Reverchon* 1054, September, 1880, U. S. Herb. No. 49861, labeled *M. Mexicana filiformis* by Reverchon, and *M. sobolifera* by Scribner;

Dallas, *Reverchon* 2253, October 5, 1900 U. S. Herb. No. 411579, labeled *M. Mexicana* by Bush, and *M. sylvatica* by Scribner;

Dallas, *Reverchon* 42073, August 26, 1880, U. S. Herb. No. 501272, labeled *M. tenuiflora* by Bush;

Dallas, *Reverchon* 2253, October 5, 1900, M. B. G. Herb. No. 75666, labeled *M. Mexicana by* Reverchon;

Dallas, *Reverchon* 2253, October 5, 1900, M. B. G. Herb. No. 75665, labeled *M. Mexicana* by Bush;

Dallas, *Reverchon* 2253, October 5, 1900. M. B. G. Herb. No. 75646, labeled *M. Mexicana* by Bush;

Dallas, *Reverchon* 1052, 1882, M. B. G. Herb. No. 79768, labeled *M. sobolifera* by Reverchon;

Dallas, *Reverchon* 4207, August, 1880, M. B. G. Herb. No. 79757, labeled *M. sobolifera* by Bush;

Dallas County, *Reverchon*, date not given, M. B. G. Herb. No. 79719, labeled *M. sylvatica* by Reverchon;

Ferris, *Reverchon* 30, 1884, M. B. G. Herb. No. 80712, labeled *M. sobolifera* var. — by Reverchon, evidently a MS. name of Vasey's;

Ferris, *Reverchon* 30, 1884, M. B. G. Herb. No. 80111, labeled *M. sobolifera* var. — by Reverchon, no doubt part of sheet No. 80112;

Ferris, *Reverchon* 16y65, 1888, M. B. G. Herb. No. 80710, labeled *M. sobolifera* var. — by Reverchon;

Without definite locality, *Reverchon* 70, 1879, type, U. S. Herb. No. 49863, labeled *M. Willdenovii* by Reverchon and Scribner, and *M. sylvatica* var. — by Scribner;

Without definite locality, *Reverchon* 70. date not given, M. B. G. Herb. No. 80082, labeled *M. Willdenovii* by Reverchon, and evidently co-type of Scribner's variety;

Without definite locality, *Reverchon*, date not given, presumably the same collection as No. 70 on sheet No. 80082, M. B. G. Herb. No. 80084, labeled *M. sylvatica* by Reverchon.

Without definite locality, *Reverchon* 1049, 1881, possibly the same collections as specimens on sheet No. 80084, M. B. G. Herb. No. 80083, labeled *M. sylvatica* var. — by Reverchon, probably a MS. name of Vasey's;

Without definite locality, *Reverchon* 1052, date not given, marked "127 Vasey," labeled *M. solobifera* by Reverchon, probably being the name supplied by Vasey;

Without definite locality, *Reverchon*, M. B. G. Herb. No. 79891;

Without definite locality, *Reverchon* 1054, date not given, M. B. G. Herb. No. 75661;

Without definite locality, *Reverchon* 30, 1885, U. S. Herb. No. 952417, labeled *M. Mexicana*, and *M. sobolifera* var. — by Scribner;

Without definite locality, but presumably Dallas, *Reverchon* 1054, 1880, U. S. Herb. No. 49862, labeled M. *sobolifera*, and *M. Willdenovii* by Scribner.

4. MUHLENBERGIA BRACHYPHYLLA Bush, n. sp.

Culms 2-4 dm. tall, much branched, much branched from the

base, the old culms stramineous, shining; infranodes glabrous; nodes glabrous; leaves numerous, short, narrow, the larger 5-7 dm. long, the upper reduced to 1-2 dm.; principal nerves of the larger leaves 7-9; panicles terminal on the culms and branches, and from all the upper and middle sheaths, numerous, very slender, short, the divisions appressed, the terminal and those terminating the branches usually short-exserted, those from the lowest sheaths usually long-exserted on very slender peduncles; spikelets 3mm. long, rather slender; glumes broadly lanceolate, attenuate or cuspidate, about one-half as long as the lemma; lemmas lanceolate, awned, minutely bearded at the base, sometimes awnless or short-awned; awns slender, about as long as the lemmas or sometimes shorter.

Type specimens collected at Webb City, Missouri, *Palmer* 2734, September 20, 1909, specimens in the Herbarium of the Missouri Botanical Garden, sheet No. 757387.

The species here proposed has been referred to *M. Torreyi* on the one hand and to *M. tenuiflora* on the other, but differs conspicuously from these species in being lower, more branched, in having more numerous leaves which are shorter and narrower, with but 7-9 principal nerves, in having numerous panicles, which are mostly short-exserted, in having glabrous yellow polished infranodes and glabrous nodes. It is much nearer *M. Mexicana*, to which it bears a strong resemblance, but differs in having shorter and broader glumes, awned lemmas, and long-exserted panicles from the lower sheaths.

Specimens Examined:

Missouri:

Golden City, *Palmer* 4575, October 6, 1913, M. B. G. Herb. No. 717221;

Webb City, *Palmer* 2734, September 20, 1909, M. B. G. Herb. No. 757387, type;

Webb City, *Palmer* 2734, September 20, 1909, M. B. G. Herb. No. 80062, type collection.

Illinois:

Bluffs Lake, *Eggert*, September 24, 1875, M. B. G. Herb. No. 79733.

5. Muhlenbergia tenuiflora (Willd.) B. S. P. Cat. Pl. N. Y. 67, 1888.

Agrostis tenuiflora Willd. Sp. Pl. 1:364, 1787.

Agrostis pauciflora Bush, Fl. Am. Sept. 1:63, 1814.

Trichochloa longiseta Trin. Agrost. 117, 1820.

Muhlenbergia Willdenovii Trin. Gram. Unifl. 188, 1824.

Muhlenbergia Willdenovii Trin., Tracy in Flora of Missouri, No. 1647, 1886; Eggert in Catalogue of Plants of Saint Louis, Missouri, 1891.

Muhlenbergia tenuiflora (Willd.) B. S. P., Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, No. 5, 1902; Daniels in Flora of Columbia, Missouri, No. 74, 1907.

Northern Texas to Mass. and Minn., Dewey in Manual of the Plants of Western Texas.

Mass. to Ont. Minn. and southward, Hitchcock in Manual.

Mass. to S. Ont. Minn. Ala. and Texas, Nash in Flora.

Mass. to Minn. Ala. and Texas, Nash in Illustrated Flora.

SPECIMENS EXAMINED:

West Haven, *Kirk* 976, August 17, 1913, U. S. Herb. No. 725822, labeled *M. tenuiflora* by Kirk, and *M. sobolifera setigera* by the Department of Agriculture.

NEW YORK:

Pennyan, *Sartwell*, date not given, M. B. G Herb. No. 79582, the plant marked 2 on this sheet;

Western New York, *Gray*, date not given, M. B. G. Herb. No. 79587.

ONTARIO:

Foster's Flats, *Macoun* 26, 242, July 11, 1901, U. S. Herb. No. 952525.

NEW JERSEY:

Cranberry Lake, *Mackenzie* 2453, September 16, 1906, M. B. G. Herb. No. 80101;

Sussex County, *Mackenzie* 1095, September 25, 1904;

Sussex County, *Mazckenzie* 2453, September 16, 1906.

PENNSYLVANIA:

Germantown, *Digyn*, date not given, M. B. G. Herb. No. 79583.

DISTRICT OF COLUMBIA:

Washington, *Ward*, July 28, 1878, M. B. G. Herb. No. 80085.

OHIO:

Margaretta Ridge, *Moscley*, July 28, 1896, U. S. Herb. No 431146.

TENNESSEE:

Cowan, *Ruth* 26, July, 1898, U. S. Herb. No. 952526.

KENTUCKY:

Big Black Mountain, *Kearney* 234, August, 1893, U. S. Herb. No. 952527;

Big Black Mountain, *Kearney* 234, August, 1893, U. S. Herb. No. 822978;

Big Black Mountain, *Kearney* 234, August, 1893, M. B. G. Herb. No. 79586;

Harlan Court House, *Kearney* 33, August, 1893, U. S. Herb. No. 952528;

Harlan Court House, *Kearney* 33, August, 1893, U. S. Herb. No. 822979;

Harlan Court House, *Kearney* 33, August, 1893, M. B. G. Herb. No. 79588;

Pineville, *Mackenzie* 962, August–September, 1904.

ILLINOIS:

Edgemont, *Craig*, October 23, 1910, M. B. G. Herb. No. 82662;

Elgin, *Vasey*, date not given, U. Ill. Herb.;

Peoria, *Brendel*, date not given, U. Ill. Herb.;

Peoria, *McDonald*, August, 1889, M. B. G. No. 773047;

St. Clair County, *Eggert*, August 3, 1877. M. B. G. Herb. No. 79838;

St. Clair County, *Eggert*, August 3, 1877, M. B. G. Herb. No. 739936;

St. Clair County, *Eggert*, August 3, 1877, N. D. Herb. No. 8143;

Urbana, *Seymour* and *White*, September 26, 1886, U. Ill.

Wabash County, *Schneck*, July 2, 1879, in part, the plant marked A on this sheet, U. Ill. Herb.;

Wabash County, *Schneck*, September 4, 1904. U. Ill. Herb.

MISSOURI:

Allenton, *Letterman*, August 1, 1900, M. B. G. Herb. No. 867670;

Allenton, *Letterman*, August 1, 1900. M. B. G. Herb. No. 772805;

Silvey, *Mackenzie* 548 A, October 2, 1901;

Without definite locality, *Bush*, date not given, U. S. Herb. No. 950198.

North Carolina:

Montreat, *Standley* and *Bollman* 9966 August 23, 1913. U. S. Herb. No. 688883;

Waynesville, *Standley* 3687, September 9, 1910, U. S. Herb. No. 514551.

Michigan:

Saugatuck, *Umbach*, August 5, 1898.

Iowa:

Iowa City, *Hitchcock*, date not given, M. B. G. Herb. No. 79585;

Winterset, *Carver* 260, September, 1884, M. B. G. Herb. No. 82688;

Alabama:

Jackson County, *Chase* 4490, October 15, 1907, U. S. Herb. No. 590834;

Jackson County, *Chase*, October 15, 1907, U. Ill. Herb.

Arkansas:

Mount Mena, *Trelease*, October 1, 1898, M. B. G. Herb. No. 79444.

Oklahoma:

Sapulpa, *Bush* 773, September 20, 1894, M. B. G. Herb. No. 79621.

6. Muhlenbergia racemosa (Michx.) B. S. G. Prel. Cat. N. Y. 67. 1888.

Agrostis racemosa Michx. Fl. Bor. Am. 1:53. 1803.

Agrostis setosa Muhl. Gram. 68. 1817.

Trichochloa glomerata Trin. Fund. Agrost. 117. 1820.

Trichochloa calycina Trin. Fund. Agrost. 117. 1820.

Polypogon racemosus (Michx.) Nutt. Gen. 1:51. 1818.

Muhlenbergia glomerata (Trin.) Gram Unifl. 191. 1824.

Muhlenbergia glomerata ramosa Vasey, Cat. Grasses U. S. 40. 1885. 1885.

Muhlenbergia racemosa ramosa (Vasey) Beal, Grasses U. S. 2:253. 1896.

Muhlenbergia glomerata Trin., Bush in Flora of Jackson County, Missouri, No. 564, 1882; Tracy in Flora of Missouri, No. 1642, 1886; Eggert in Catalogue of Plants of Saint Louis, Missouri, 1891.

Muhlenbergia racemosa (Michx.) B. S. P., Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, No. 4,

1902; Daniels in Flora of Columbia, Missouri, No. 72, 1907.

N. F. to Wash. and B. Col. and southward in the East to N. Car., and in the West to Texas (?), N. Mex. and Ariz., Scribner and in the West to Texas (?), N. Mex. and Ariz., Scribner in Rhodora, l. c.

N. F. to N. J. and southward, Hitchcock in Manual.

N. F. to B. Bot., N. J., N. Car., Mo. and N. Mexico, Nash in Flora.

N. F. to B. Col. south to N. J. and N. Mex. Nash in Illustrated Flora.

New Foundland to Washington, south to Alabama and Nevada.

SPECIMENS EXAMINED:

NEWFOUNDLAND:

Exploits River and Badger Brook, *Robinson* and *Schrenk* 196, August 13, 1894, M. B. G. Herb. No. 80096;

Exploits River and Badger Brook, *Robinson* and *Schrenk* 196, August 13, 1894, M. B. G. No. 79741.

MAINE:

Crystal, *Knight*, September 15, 1905;

Mount Desert Island, *Rand* and *Redfield*, August 21, 1897, M. B. G. Herb. No. 79710;

St. Francis, *Fernald* 169, August 21, 1889, M. B. G. Herb. No. 79967.

NEW HAMPSHIRE:

Gilmanton, *Blake*, September 6, 1861, M. B. G. Herb. No. 79909;

Sanbornton, *Carter*, 128, September 20, 1902, U. Ill. Herb.

VERMONT:

Bellows Falls, *Carey*, 1741, M. B. G. Herb. No. 79677.

CANADA:

Lamberton, *Glatfelter*, August 2, 1892, M. B. G. Herb. No. 80092.

NEW YORK:

Bergen, Collector not given, August 30, 1907, U. Ill. Herb.;

Niagara Falls, *Engelmann*, August, 1840, M. B. G. Herb. No. 79678;

Niagara Falls, *Morong*, August 28, M. B. G. Herb. No. 78010;

Pennyan, *Sartwell*, date not given, M. B. G. Herb. No. 79961;

Western New York, *Gray*, date not given, M. B. G. Herb. No. 79965;
Western New York, *Gray*, date not given, M. B. G. No. 79962;
Western New York, *Gray*, date not given, M. B. G. No. 79676;
Without definite locality, collector and date not given, M. B. G. Herb. No. 79954.

ONTARIO:
Bicaber, *Hoy*, August, 1883, M. B. G. Herb. No. 79624;
Lambton County, *Glatfelter*, August 22, 1892, M. B. G. Herb. No. 80066.

NEW JERSEY:
Cranberry Lake, *Mackenzie* 2428, September 16, 1906, M. B. G. No. 80100.
Mount Arlington, *Mackenzie* 918, August 21, 1904;
Sussex County, *Mackenzie* 2428, September 16, 1906;
Without definite locality, *Curtis* M. B. G. Herb. No. 79675;

INDIANA:
Wells County, *Deam*, September 11, 1901, M. B. G. Herb. No. 80076.

ILLINOIS:
Augusta, *Mead*, 1843, M. B. G. Herb. No. 82695;
Bluffs Lake, *Eggert*, September 11, 1877, M. B. G. Herb. No. 79908;
Champaign, *Clinton*, October 1, 1895. U. Ill. Herb.;
Chicago, *Glatfelter* 643, August 20, 1893, M. B. G. Herb. No. 80071;
Dupont, *Eggert*, September 11, 1877, M. B. G. No. 739390;
Dupont, *Eggert* 11, 1877, M. B. G. Herb. No. 738989;
Dupont, *Eggert*, September 11, 1877, M. B. G. Herb. No. 772999;
Dupont, *Eggert*, September 11, 1877, M. B. G. Herb. No. 79840;
Dupont, *Eggert*, September 11, 1877, N. D. Herb. No. 8144;
Dupont, *Eggert*, September 11, 1877, N. D. Herb. No. 8140;
East Alton, *McDonald*, August, 1897, U. Ill. Herb.;
Elgin, *Sherff* 1946, September 14, 1912. U. Ill. Herb.;
Falling Springs, *Engelmann*, September, 1844, M. B. G. Herb. No. 79673, evidently part of the collection sheet

No. 79674, the plant marked A on that sheet exactly matching this;
Lake Villa, *Gleason* and *Shobe* 128, August 6, 1906, U.Ill. Herb.;
Lake Villa, *Gleason* and *Shobe* 200, August 9, 1900, U. Ill. Herb.;
Oquawka, *Patterson*, September, year not given, M. B. G. Herb. No. 772777;
Peoria, *Brendel*, date not given, U. Ill. Herb.;
Princeville, *Chase* 940, October 14, 1900, U. Ill. Herb.;
Princeville, *Chase* 1269, September 23, 1906, U. Ill. Herb.;
Wady Petre, *Chase* 1943, September 22, 1908, U. Ill. Herb.;
Without definite locality, *Patterson*, date not given, M. B. G. Herb. No. 785591.

Missouri:

Banks of the Mississippi, presumably just South of Saint Louis, *Engelmann*, August, 1843, the plants marked B on this sheet, the other plant marked A on this sheet evidently belonging to sheet No. 79673;
Congo, *Hoffman*, October 7, 1916;
Courtney, *Bush* 6508, October 16, 1911, U. S. Herb. No. 673597;
Creve Coeur Lake *Kellogg* 28, September 25, 1901, U. S. Herb No. 950202;
Creve Coeur Lake, *Norton*, September 11, 1898, M. B. G. Herb. No. 82683;
Dodson, *Hoffman*, September 10, 1916;
Hannibal, *Davis* 1044, September 16, 1911, U. S. Herb. No. 673942;
Hannibal, *Davis* 1044, September 16, 1911, M. B. G. Herb. No. 709096;
Jackson County, *Bush* 59, August 26, 1890, M. B. G. Herb. No. 768677;
Jackson County, *Bush* 1876, August 28, 1891, M. B. G. Herb. No. 80054;
Jackson County, *Bush*, September 11, 1892, M. B. G. Herb. No. 80044;
Jackson County, *Bush*, September 22, 1893, M. B. G. No. 80050;
Jackson County, *Bush* 405, September 22, 1892, U. S. Herb. No. 950210;

Jefferson Barracks, *Eggert*, September 11, 1877, M. B. G. Herb. No. 79907;
Randolph, *Mackenzie* 368, October 2, 1898, M. B. G. Herb. No. 89720;
Randolph, *Mackenzie* 369, October 2, 1898;
Sheffield, *Hoffman*, October 7, 1916;
Sheffield, *Mackenzie* 658, October 18, 1901;
St. Louis, *Eggert* 225 a, September 4, 1877, U. S. Herb. No. 950203, exactly same date and collection as specimens on sheet No. 79907;
St. Louis, *Engelmann*, date not given, M. B. G. Herb. No. 79963.

The Missouri Muhlenbergias.---III.

BY BENJAMIN FRANKLIN BUSH.

IOWA:

Ames, *Ball* 113, August 5, 1896, M. B. G. Herb. No. 79950;
Ames, *Ball* 113, August 5, 1896, M. B. G. Herb. No. 79904;
Ames, *Hitchcock*, August, 1889, M. B. G. Herb. No. 79922;
Ames, *Hitchcock*, date not given, M. B. G. Herb. No. 79960;
Armstrong, *B. S.*, September, 1895, M. B. G. Herb. No. 79749
Armstrong, *Cratty*, August 21, 1897, M. B. G. Herb. No. 79910;
Dakota City, *Pammel*, August 8, 1896, M. B. G. Herb. No. 79951;
Iowa City, *Hitchcock*, August, 1888, M. B. G. Herb. No. 79911;
Ledyard, *Pammel* and *Cratty* 760, August 28, 1897, M. B. G. Herb. No. 79921;
Ledyard, *Pammel* and *Cratty* 760, August 28, 1897, M. B. G. Herb. No. 79925;
Ledyard, *Pammel* and *Cratty* 760, August 28, 1897, M. B. G. Herb. No. 80106;
Ledyard, *Pammel* and *Cratty* 760, August 28, 1897;
Mount Pleasant, *Mills* 13, 1894, M. B. G. No. 79927;
Muscatine, *Mackenzie* 781, September 26, 1894;
Sioux City, *Wakefield*, August 30, 1887, M. B. G. Herb. No. 79949;
Tabor, *Pammel* 778, September 20, 1897, M. B. G. No. 79906;
Tabor, *Pammel* 778, September 20, 1897, M. B. G. Herb. No. 79917;
Webster City, *Pammel* 274, June 15, 1895, M. B. G. Herb No. 79948;

Pages 57–77, Am. Mid. Nat., Vol. VI., No. 5, September, 1919.

West Union, *Whitmere* 248, July 6, 1896, M. B. G. Herb. No. 79947;
Winterset, *Carver*, date not given, M. B. G. Herb. No. 79924.

WISCONSIN:
LaCrosse, *Hale*, 1861, M. B. G. Herb. No. 75629;
Mirror Lake, *Eggert*, August, 24, 1903, M. B. G. Herb. No. 82672;
Prairie du Chien, *Hale*, 1861, M. B. G. Herb. No. 75648;
St. Croix, *Hale*, M. B. G. Herb. No. 79956;
St. Croix, collector not given, but probably *Hale*, date not given, M. B. G. Herb. No. 79699.

MINNESOTA:
Detroit, *Seymour*, August 24, 1884, U. Ill. Herb.;
Lake Minnetonka, *Glatfelter*, October 3, 1898, M. B. G. Herb. No. 80089;
Sandy Lake, *Sandberg* 783, August 12, 1891, U. Ill. Herb.;
Spirit Lake, *Geyer*, September, 1838, M. B. G. Herb. No. 79685.

KANSAS:
Manhattan, *Norton*, September, 1893, M. B. G. Herb. No. 79926;
Manhattan, *Norton*, October 22, 1892, M. B. G. Herb. No. 79940;
Riley County, *Norton* 596, September 3, 1895, M. B. G. Herb. No. 79946.

NEBRASKA:
Along the Missouri to the Mountains, *Hayden*, July 8, 1854, M. B. G. Herb. No. 79681:
Fort Union, *Hayden*, 1855, M. B. G. Herb. No. 79684;
Fort Union, *Hayden*, date not given, M. B. G. Herb. No. 79964;
Nuckolls County, *Hedgcock* 348, July, 1886, M. B. G. Herb. No. 79807;
Nuckolls County, *Hedgcock*, July 3, 1899, M. B. G. Herb. No. 79806;
Omaha, *Eastman*, October 1, 1915, U. Ill. Herb.;
Thomas County, *Rydberg* 1762, September 13, 1893, U. Ill. Herb.
Without definite locality, *Hayden*, 1853-54, M. B. G. Herb. No. 82657.

DAKOTA:

Without definite locality, *Vasey*, 1888, M. B. G. Herb. No. 79912.

SOUTH DAKOTA:

Brookings, *White*, August 3, 1908, M. B. G. Herb. No. 79802;
Brookings, *White*, August 3, 1908, M. B. G. Herb. No. 79803.

NORTH DAKOTA:

Benson County, *Lunell*, August 5, 1906;
Benson County, *Lunell*, August 26, 1906, U. S. A. Herb.;
Fargo, *Seymour*, August 23, 1884, U. S. A. Herb.;
Grand Falls, *Brannon*, 52, July 1, 1886, M. B. G. Herb. No. 79905;
Lake Ibsen, *Lunell*, July 29, 1900, U. S. Herb. No. 746130.

ALABAMA:

Without definite locality, *Buckley*, date not given. M. B. G. Herb. No. 79955.

OKLAHOMA:

Snyder, *Eggert*, September 19, 1903, M. B. G. Herb. No. 82673;
Snyder, *Eggert*, September 18, 1903, M. B. G. Herb. No. 82674.

TEXAS:

Without definite locality, *Reverchon* 1677, October 25, 1874, M. B. G. Herb. No. 80108.

NEW MEXICO:

Animas Creek, *Metcalfe*, 1142, July 13, 1904, M. G. B. Herb. No. 79801;
Animas Creek, *Metcalfe*, 1142, July 13, 1904, M. B. G. Herb. No 79824;
Dona Ana County, *Wooton* and *Standley* 3342, September 25, 1908;
Lucero's Ranch, *Ellis* 18, August 10, 1914, M. B. G. Herb. No. 760268;
Mesilla Park, *Standley*, September 29, 1906, M. B. G. Herb. No. 80103;
Picos, *Standley*, 4921, August 15, 1908, M. B. G. Herb. No. 79823;
River Mimbres, *Bigelow*, November 5, 1851, M. B. G. Herb. No. 79966;

Without definite locality, *Fendler*, 965, 1847, M. B. G. Herb. No. 79682;
Without definite locality, *Fendler*, 966, 1847, M. G. B. Herb. No. 79683;
Without definite locality, *Fuller*, date not given, M. B. G. Herb. No. 78953;
Without definite locality, *Wright* 1888, 1851-52, M. B. G. Herb. No. 79680.

COLORADO:

Black Cañon, *Baker* 686, August 11, 1901, M. B. G. Herb. No. 79918;
Boulder Cañon, *Daniels* 526, August 21, 1906, No. B. G. Herb. No. 80077;
Brighton, *Johnston* 389A, September 15, 1908, M. B. G. Herb. No. 80102;
Cañon City, *Brandegee* 3457, 1872, M. B. G. Herb. No. 79725;
Cañon City, *Brandegee* 970, 1874, M. B. G. Herb. No. 79724;
Colorado Springs, *Chase* 5279, August 28 to September 5, 1908, U. S. A. Herb.;
Deer Run, *Baker* 910, August 21, 1901, M. B. G. Herb. No. 79919;
Denver, *Holm* September 14, 1889, U. S. A. Herb.;
Denver, *Holm*, August 6, 1898, U. S. A. Herb.;
Denver, *Holm*, July 15, 1899, M. B. G. Herb. No. 778843;
Fort Collins, *Pammel*, June 29, 1896, M. B. G. Herb. No. 79952;
Fort Collins, collector not given, October 2, 1896, M. B. G. Herb. No. 79945;
Manitou, *Glatfelter*, September 9, 1905, M. B. G. Herb. No. 80087;
Manitou, *Glatfelter*, September 9, 1905, M. B. G. Herb. No. 80121;
Manitou, *Letterman*, August 11, 1884, M. B. G. Herb. No. 772774;
Mountain Valley, *Brandegee* 603, August, 1873, M. B. G. Herb. No. 79724;
Rocky Mountains, *Hall*, 1862, M. B. G. Herb. No. 79910.

WYOMING:

Sundance Mountain, *Chase* 5270, August 25, 1908, U. S. A. Herb.

MONTANA:

Billings, *Seymour*, September 4, 1884, U. S. A. Herb.

WASHINGTON:

Spokane County, *Suksdorf* 947, July 12, 1889, M. B. G. Herb. No. 79959;

Without definite locality, *Tracy*, date not given, M. B. G. Herb. No. 79916;

Without definite locality, collector and date not given, M. B. G. Herb. No. 79928.

ARIZONA:

Nagle's Ranch, *Jones* 6056, September 20, 1894, M. B. G. Herb. No. 80073;

St. John's, *Griffiths* 5182, August 9, 1903, U. S. A. Herb.

NEVADA:

Humboldt Pass, *Watson* 1288, September, 1868, M. B. G. Herb. No. 79613.

UTAH:

Without definite locality, *Jones* 6033, 1894, M. B. G. Herb. No. 79942.

7. MUHLENBERGIA COMMUTATA (Scribner) Bush, n. sp.

Muhlenbergia Mexicana commutata Scribner. Rhodora *9:* 18. 1907.

"Panicles much longer and larger than those of M. MEXICANA; lemmas awned; awns 4-10 mm. long; otherwise much as in *M. Mexicana*."

New York, Delaware, Pennsylvania, Illinois and Minnesota, Scribner, l. c.

Vermont and New York to South Dakota, south to Virginia, Nebraska, Missouri and Oklahoma.

SPECIMENS EXAMINED:

VERMONT:

Rutland, *Kirk*, 974, September 9, 1913, U. S. Herb. No. 725390.

NEW YORK:

Fulton, *Rowlee*, August, 1888, M. B. G. Herb. No. 79739;

Oxford, *Coville*, August 29, 1884, U. S. Herb. No. 295258.

ONTARIO:

Gault, *Herriot*, 80, August 31, 1901, U. S. Herb. No. 952416;

Pelee Point, *Macoun* 26245, August 5, 1901, U. S. Herb. No. 952415.

NEW JERSEY:

Hoboken, collector and date not given, U. S. Herb. No. 746217.

PENNSYLVANIA:

Easton, *Garber*, 1890, U. S. Herb. No. 265677;

Susquehanna, *Kneucker* 315, August, 1901, U. S. Herb. No. 587196;

Susquehanna, *Porter*, August 8, 1895, U. S. Herb. No. 952387;

Susquehanna, *Kneucker* 315, August, 1901, M. B. G. Herb. No. 79740.

VIRGINIA:

Bedford County, *Curtiss*, September, 1873, U. S. Herb. No. 746218;

Bedford County, *Curtiss*, September, 1873, M. B. G. Herb. No. 79727.

ILLINOIS:

Peoria, *McDonald*, September, 1900, U. S. Herb. No. 746214;

Wady Petra, *Chase*,1540, August 4, 1907, U. S. Herb. No. 645418;

Without definite locality, *Wolf*, 1882, U. S. Herb. No. 952377.

MISSOURI:

Gates, *Standley*, 9382, August 26, 1912, U. S. Herb. No. 688298, in part, the plant marked B on this sheet;

Whiteside, *Davis*, 1030, September 11, 1911, U. S. Herb. No. 673932.

MICHIGAN:

South Lockwood, *Dodge* 17, October 2, 1911, U. S. Herb. No. 952373.

IOWA:

Iowa Lake, *Beatty*, August 27, 1897, M. B. G. Herb. No. 75587;

Johnson County, *Snyder*, September, 1886, M. B. G. Herb. No. 75604.

Mount Pleasant, *Mills* 860, August, 1897, U. S. Herb. No. 328112.

MINNESOTA:

Fort Snelling, *Mearns* 749, September 1, 1891, U. S. Herb. No. 952392.

NEBRASKA:

Weeping Water, *Williams*, date not given, U. S. Herb. No. 952390.

SOUTH DAKOTA:

Iroquois, collector not given, August 15, 1874, M. B. G. Herb. No. 79708;

Tacoma Park, *Griffiths* 780, September 11, 1897, U. S. Herb. No. 79708;

Tacoma Park, *Griffiths* 780, September 11, 1897, U. S. Herb. No. 952394.

OKLAHOMA:

Verdigris, *Bush* 770, August 2, 1894, M. B. G. Herb. No. 79633;

Verdigris, *Bush* 771, October 5, 1894, M. B. G. Herb. No. 79632.

8. MUHLENBURGIA GLABIFLORA Scribner, Rhodora 9: 22. 1917.

Culms terete, very minutely scabrous for a short distance below the nodes; panicles 2-6 cm. long, occasionally somewhat glomerate, the closely flowered short branches appressed, usually partly enclosed in the subtending leaf-sheaths; spikelets ovate-lanceolate; glumes lanceolate, acute or acuminate-pointed, subequal, a little shorter than, as long as, or a little longer than the lemma, scabrous on the keel excepting near the base; lemmas ovate or oblong, obtuse or submucronate-pointed, scabrous on the heel and lateral nerves above, otherwise smooth, no hair at the base; palea ovate-oblong, obtuse, equalling on a little shorter than the lemma.

Pennsylvania and Maryland, west to Illinois, Missouri and Texas

SPECIMENS EXAMINED:

PENNSYLVANIA:

Wissahickan Creek, *Smith* 84, August, U. S. Herb. No. 952386

MARYLAND:

Hyattsville, *Scribner*, 1888, U. S. Herb. No. 746131.

ILLINOIS:

Mascoutah, *Welsch*, 1862-1871, U. S. A. Herb.;

Taylorville, *Andrews*, September 10, 1898, U. S. A. Herb.

MISSOURI:

St. Louis, *Engelmann*, 1842, M. B. G. Herb. No. 79662.

9. MUHLENBERGIA MEXICANA (L.) Trin. Gram. Unifl. 189. 1824.

Agrostis Mexicana L. Mant. 1: 31. 1767.

Agrostis laterflora Michx. Fl. Bor. Am. 1: 53. 1803.

Agrostis clandestina Sprengel, Mont. 1: 32. 1807.

Cinna Mexicana (L.) Beauv. Agrost. 32. 158. 1812.

Trichochloa Mexicana (L.) Grin. Fund. Agrost. 117. 1820.

Muhlenbergia clandestina (Spreng.) Trin. Gram. Unifl. 190. 1824.

Muhlenbergia polystachya Scribner, l. c. 1907, not of Mackenzie and Bush, 1902.

Muhlenbergia polystachya Hitchcock, Gray's New Manual, ed. 7. 127. 1908, not M. &. B.

Muhlenbergia foliosa Nash, Britton and Brown, Illustrated Flora, 2nd ed. 185. 1913, not *M. foliosa* Trin. 1824.

Muhlenbergia Mexicana Trin., Bush in Flora of Jackson County Missouri, No. 862, 1885; Tracy in Flora of Missouri, No. 1642, 1886; Eggert in Catalogue of Plants of St. Louis, Missouri, 1891.

Muhlenbergia Mexicana (L.) Trin., Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, No. 2, 1902, Palmer in Catalogue of Plants of Jasper County, Missouri, Nos. 1388, 2686, 2797, 3463, 3467 and 3475, 1916.

Muhlenbergia Mexicana filiformis Vasey, Bush in Flora of Jackson County, Missouri, No. 863. 1885.

Muhlenbergia Mexicana filiformis Gray. Eggert in Catalogue of Plants of Saint Louis, Missouri, 1891.

Muhlenbergia Mexicana filiformis Muhl., Tracy in Flora of Missouri, No. 1644, 1886.

N. B. to Ont. S. Dak. and southward, Hitchcock in Manual.

N. B. to W. Ont., N. Car., Tenn., Nebr. and the Ind. Terr., Nash in Flora.

N. B. to Wyo., S. Dak., N. Car., and Texas, Nash in Illustrated Flora.

Massachusetts to North Dakota, south to Alabama and northeastern Texas.

SPECIMENS EXAMINED:

MASSACHUSETTS:

Granville, *Seymour* 2, September 15, 1913, M. B. G. Herb. No. 746678;

Norquit, *Sturtevant*, August 31, 1888, M. B. G. Herb. No. 75588;

South Warmington, *Sturtevant* September 11, 1890, M. B. G. Herb. No. 75577;

South Warmington, *Sturtevant*, September 11, 1890, M. B. G. Herb. No. 75576;

South Warmington, *Sturtevant*, September 17, 1890, M. B. G. Herb. No. 75575;

Walpole, *Greenman*, 3236, September 26, 1897, M. B. G. Herb. No. 742290.

CONNECTICUT:

South Canaan, *Greenman* 3229, October 3, 1897, M. B. G. Herb. No. 742285.

Irvin Lakes, *Greenman* 2453, September 25, 1910, M. B. G. Herb. No. 738434.

NEW YORK:

Bergen, collector not given, August 30, 1915, U. S. A. Herb.;

Buffalo, *Clinton* 9272, date not given, M. B. G. Herb. No. 75572;

Ithaca, *Pearce*, October 6, 1883, U. S. Herb. No. 152897;

Ithaca, *Treleare*, August 19, 1878, M. B. G. Herb. No. 75605;

Lebanon Springs, *Harrison*, September 25, 1890, U. S. Herb. No. 952387:

New York, *Coville*, September 24, 1884, U. S. Herb. No. 295257;

New York, *Gerard*, 1882, U. S. Herb. No. 952388;

Western New York, *Gray*, date not given, M. B. G. Herb. No. 75626.

ONTARIO:

Fredericktown, *Fowler*, 1878, U. S. Herb. No. 259605;

Gault, *Herriott* 81, August 31, 1901, U. S. Herb. No. 952412.

NEW JERSEY:

Sussex County, *Mackenzie* 2434, October 16, 1906, M. B. G. Herb. No. 75668.

DELAWARE:

Centreville, *Commons*, October 5, 1873, M. B. G. Herb. No. 75570.

PENNSYLVANIA:

Easton, *Porter*, September 2, 1895, U. S. Herb. No. 952385;

Germantown, *Scribner*, September 28, 1875, U. S. Herb. No. 746128;

Graeff's Landing, *Heller* 4815, September 14, 1901, U. S. Herb. No. 4406273;

Graeff's Landing, *Heller*, September 14, 1901, M. B. G. Herb. No. 75642;

Lancaster, *Heller* 4819, September 12, 1900, U. S. Herb. No. 406277;
Lancaster, *Small*, date not given, U. S. Herb. No. 746125;
Lancaster, *Small*, May, 1891, U. S. Herb. No. 298410;
Mountville, *Eby*, July 8, 1891, M. B. G. Herb. No. 75633;
Philadelphia, *Digyn*, date not given, M. B. G. Herb. No. 79975;
Philadelphia, *Scribner* 105, September, 1875, U. S. Herb. No. 746128;
Westchester, *Deane*, date not given, U. S. Herb. No. 746116;
Westchester, *Deane*, 1827, M. B. G. Herb. No. 82681;
Williamsport, *McMinn*, 1867, U. S. Herb. No. 952384.

MARYLAND:

Chevy Chase, *Mosher*, September 15, 1915, U. S. A. Herb.;
Great Falls of the Potomac, *Ball* 73, September 4, 1899, U. S. Herb. No. 952406;
Great Falls of the Potomac, *Ball* 73, September 4, 1898, M. B. G. Herb. No. 75589.

DISTRICT OF COLUMBIA:

Deanewood, *Chase* 3006 1-2, September 9, 1905, U. S. Herb. No. 746115;
Deanewood, *Chase* 3006 1-2, September 9, 1905, U. S. A. Herb.
High Island, *Dewey* 121, September 7, 1894, U. S. Herb. No. 491691;
High Island, *Dewey* 121, September 7, 1894, U. S. Herb. No. 490690;
Hyattsville, *Holm*, September 18, 1897, M. B. G. Herb. No. 779206;
Long Bridge, *Blanchard*, September 28, 1891, U. S. Herb. No. 311999;
Mount Pleasant, *Chase* 279, September 7, 1905, U. S. Herb. No. 952405;
Potomac Flats, *Ball* 712, October 20, 1906, M. B. G. Herb. No. 952407;
Washington, *Wheeler*, September 20, 1906, U. S. Herb. No. 952404.

OHIO:

Athens, *Ball*, September 21, 1902, U. S. Herb. No. 952382;
Central Ohio, *Sullivant*, date not given, M. G. G. Herb. No. 75624;

Cincinnati, *Lloyd* 574, September 16, 1890, M. B. G. Herb. No. 75624;

Cleveland, *Greenman* 3249, July 29, 1896, M. B. G. Herb. No. 742082;

Liverpool, *Holm*, September 18, 1912, U. S. A. Herb.;

London, *Sharp* 6790, September, October, U. S. Herb. No. 952383;

Sheffield, *Ricksecker* 203, September 25, 1901, U. S. Herb. No. 217632;

St. Marys, *Kneucker* 203, September 25, 1901, U. S. Herb, No. 557160;

St. Marys, *Kneucker* 203, September 25, 1901, M. B. G. Herb. No. 75582.

VIRGINIA:

Waterloo, *Pollard* 757, October 18, 1895, U. S. Herb. No. 307244;

Without definite locality, *Pech*, date not given, U. S. Herb. No. 952408.

WEST VIRGINIA:

Aurora, *Steele* and *Steele*, August 30, 1898, U. S. Herb. No. 359404;

Goose Creek, *Donnell-Smith*, September 8, 1879, U. S. Herb. No. 490294;

Sweet Springs, *Steele* and *Steele* 317, September 15, 1903, M. B. G. Herb. No. 75583;

Sweet Springs, *Steele* and *Steele* 317, September 15, 1898, U. S. Herb. No. 490294.

INDIANA:

Clark County; collector and date not given, U. S. Herb. No. 722787;

Lafayette, *Dorner* 222, September 15, 1901, U. S. Herb. No. 952381;

Russellville, *Grimes* 790, September 11, 1911, U. S. Herb. No. 952380;

Wells County, *Deam*, September 12, 1897.

TENNESSEE:

Knoxville, *Ruth* 807, June, 1888, M. B. G. Herb. No. 75567.

KENTUCKY:

Bell County, *Kearney* 366, September, 1893, U. S. Herb. No. 952418;

Bell County, *Kearney* 366, September, 1893, U. S. Herb. No. 746132;
Bell County, *Kearney* 366, September, 1893, U. S. Herb. No. 822929;
Wasiota, *Kearney* 366, September, 1883, M. B. G. Herb. No. 75631;
Without definite locality, *Short*, 1840, M. B. G. Herb. No. 75607.

Illinois:
Kankakee, *Crampton* 547, September 11, 1913, U. S. Herb. No. 750683;
Mascontah, *Welsch*, 1867-1871, U. S. A. Herb.;
Mount Carmel, *Schneck*, 1879, U. S. Herb. No. 952373;
Mount Carmel, *Schneck*, October, 1879, U. S. A. Herb.;
Mount Carmel, *Schneck*, September 25, 1881, U. S. A. Herb.;
Mount Carmel, *Schneck*, September 8, 1879, U. S. A. Herb;
Peoria, *Brendel*, date not given, U. S. A. Herb.;
Taylorville, *Andrews*, August 2, 1888, U. S. A. Herb.;
Taylorville, *Andrews*, September 12, 1858, U. S. A. Herb.;
Urbana, *Gates*, October 6, 1907, U. S. Herb. No. 645175;
Urbana, *Gibbs*, September 26, 1898, U. S. A. Herb.;
Urbana, *Gibbs* September 27, 1888, U. S. A. Herb.;
Wabash County, *Schneck*, September 18, 1880, U. S. A. Herb.;
Wabash County *Schneck*, September 18, 1880. U. S. Herb. No. 746117;
Wady Patra, *Chase* 200, August 31, 1888, U. S. Herb. No. 746123;
Wady Petra, *Chase* 200, August 31, 1888, U. S. Herb. No. 952378;
Wady Petra, *Chase* 1166, September 25, 1904, U. S. Herb. No. 952373:
Wady Petra, *Chase* 1166, September 25, 1904, U. S. Herb. No. 580931;
Wady Petra, *Chase* 1267, September 23, 1806, U. S. Herb. No. 952374;
Without definite locality, *Engelmann*, August, 1883, M. B. G. Herb. No. 79660, the plant marked 1 on this sheet, but I can not be sure that the label cited belongs to the plant marked 1.

MISSOURI:

Aberden, *Davis* 963, September 11, 1911, M. B. G. Herb. No. 709401;

Aberden, *Davis* September 24, 1911, M. B. G. Herb. No. 709375;

Allenton, *Letterman*, August, 1879, M. B. G. Herb. No. 772776;

Clarksville, *Davis* 1117, September 24, 1911, U. S. Herb. No. 673972;

Clarksville, *Davis*, September 24, 1911, M. B. G. Gerb. No. 709316;

Clay County, *Mackenzie* 790, September 21, 1895, M. B. G. Herb. No. 75677;

Clay County, *Mackenzie* 945, September 21, 1895;

Courtney, *Bush* 1154, September 10, 1901, M. B. G. Herb. No. 75568;

Creve Coeur Lake, *Glatfelter* September 11, 1894, M. B. G. Herb. No. 75654;

Creve Coeur Lake, *Glatfelter*, September 17, 1900, M. B. G. Herb. No. 75655;

Creve Coeur Lake, *Kellogg* 29, September 25, 1901, U. S. Herb. No. 950197;

Dodson, *Hoffman* September 10, 1916;

Dodson, *Hoffman* September 10, 1916;

Dodson, *Mackenzie*, May 8, 1875, M. B. G. Herb. No. 75676;

Forest Park, *Glatfelter* 613, September 20, 1891, M. B. G. Herb. No. 75653;

Forest Park, *Glatfelter* 643, September 20, 1891, M. B. G. Herb. No. 75651;

Gates, *Standley* 9382, August 26, 1912, U. S. Herb. No. 688288, in part, the plant marked A on this sheet;

Hannibal, *Davis* 1106, September 19, 1911, M. B. G. Herb. No. 709121;

Hannibal, *Davis* 1106, September 19, 1911, U. S. Herb. No. 673964;

Hannibal, *Davis* 1410, October 18, 1911, M. B. G. Herb. No. 708745;

Jackson County, *Bush* 1726, September 14, 1890, M. B. G. Herb. No. 75673;

Jackson County, *Bush* 1880, September 14, 1890, M. B. G. Herb. No. 75675;
Jackson County *Bush* September 27, 1893, M. B. G. Herb. No. 75678;
Jasper, *Palmer* 1388, September 12, 1909, M. B. G. Herb. No. 75670;
Jasper, *Palmer* 1388, September 12, 1909, M. B. G. Herb. No. 756904;
Jefferson Barracks, *Eggert* September 4, 1877, M. B. B. Herb. No. 739682;
Jefferson Barracks, *Eggert*, September 4, 1897, M. B. G. Herb. No. 75658;
Jefferson Barracks, *Eggert* September 4, 1877, M. B. G. Herb. No. 739940;
Kansas City, *Stigall* 49, October 20, 1902, M. B. G. Herb. No. 75672;
Lee's Summit, *Mackenzie* 419, September 9, 1901;
McDonald County, *Bush*, September 1, 1893, M. B. G. Herb. No. 75672;
Oakwood, *Davis* 130, October 6, 1911, M. B. G. Herb. No. 756896;
Scotland, *Palmer* 2686, September 12, 1909, M. B. G. Herb. No. 75652;
Scotland, *Palmer* 2686, September 12, 1909, M. B. G. Herb. No. 757605;
Shannon County, *Bush*, October 21, 1893, M. B. G. Herb. No. 75671;
Shannon County, *Bush*, October 21, 1893, M. B. G. Herb. No. 75673;
Sheffield, *Mackenzie* 563, October 18, 1901;
Sibley, *Mackenzie* 563, October 2, 1901;
Springfield, *Weller* 53, September 13, 1890, U. S. Herb. No. 950196;
St. Louis, *Eggert* 223a, October 7, 1897, U. S. Herb. No. 950195;
St. Louis, *Pammel*, October, 1886, M. B. G. Herb. No. 79335;
St. Louis County, *Eggert*, September 11, 1897, M. B. G. Herb. No. 75640;
St. Louis County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 739939;

St. Louis County, *Eggert*, September 11, 1877 M. B. G. Herb. No. 739388;
St. Louis County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 75657;
St. Louis County, *Eggert*, September 11, 1877, M. B. G. Herb. No. 75641;
Swan, *Bush* 460, September 24, 1899, M. B. G. Herb. No. 75574;
Swope Park, *Mackenzie* 437, September 13, 1901;
Turner, *Standley* 9851, September 5, 1912, U. S. Herb. No. 688766;
Webb City, *Palmer* 2797, September 29, 1909, M. B. G. Herb. No. 75656;
Webb City, *Palmer* 2757, September 29, 1909, M. B. G. Herb. No. 756902;
Webb City, *Palmer* 3463, September 17, 1911, U. S. A. Herb.;
Webb City, *Palmer* 3463, September 17, 1911, M. B. G. Herb. No. 709108;
Webb City, *Palmer* 3463, September 17, 1911, M. B. G. Herb. No. 756899;
Webb City, *Palmer* 3463, September 17, 1911, M. B. G. Herb. No. 709021;
Webb City, *Palmer* 3463, September 17, 1911, M. B. G. Herb. No. 756900;
Webb City, *Palmer* 3475, September 17, 1911, M. B. G. Herb. No. 709006;
Webb City, *Palmer* 3475, September 17, 1911, M. B. G. Herb. No. 756903;
Webb City, *Palmer* 3475, September 17, 1911, M. B. G. Herb. No. 756901;
Whiteside, *Davis* 1030, September 11, 1911, M. B. G. Herb. No. 709077;
Whiteside, *Davis* 1010, September 11, 1911, M. B. G. Herb. No. 709228;
Whiteside, *Davis* 1011, September 11, 1911, U. S. A. Herb.;
Whiteside, *Davis* 1030, September 11, 1911, U. S. Herb No. 673932;
Whiteside, *Davis* 1011, September 11, 1911, U. S. Herb. No. 673925;

Without definite locality, collector not given, August, 1881, M. B. G. Herb, No. 75625.

North Carolina:

Biltmore, *Biltmore Herbarium* 657b, September 12, 1898, M. B. G. Herb. No. 75603;

Biltmore, *Biltmore Herbarium* 657b, September 12, 1898, U. S. Herb. No. 335376;

Magnetic City, *Wetherby* 24, September 20, 1895, U. S. Herb. No 952410;

Mountains of North Carolina, *Boynton*, 1888, U. S. Herb. No. 852411;

Without definite locality, *Boynton*, date not given, U. S. Herb. No. 746129.

Iowa:

Amana, *Schadt* 657, September 21, 1897, M. B. G. Herb. No. 75601;

Carroll, *Simon* 1018, September 21, 1897, M. B. G. Herb. No. 75635;

Chariton, *Mallory* 799, October 2, 1897, U. S. Herb. No. 75634;

Dakota City, *Pammel* 211, August 8, 1896, M. B. G. Herb. No. 79615;

De Witt, *Pammel* 1451, September 9, 1898, M. B. G. Herb. No. 75593;

Dixon, *Snyder* 734, September 21, 1897, M. B. G. Herb. No. 75602;

Iowa City, *Hitchcock*, 1889, M. B. G. Herb. No. 75584;

Iowa City, *Hitchcock*, date not given, M. B. G. Herb. No. 75622;

Iowa City, *Hitchcock*, date not given, U. S. Herb. No. 733277;

Iowa City, *Somes* 3868, September 9, 1909, U. S. Herb. No. 672490;

Mount Ayr, *Beard* 638, September 25, 1897, M. B. G. Herb. No. 75595;

Mount Pleasant, *Mills*, 1894, M. B. G. Herb. No. 75620;

Mount Pleasant, *Mills*, 1894, U. S. Herb. No. 952397;

Mount Pleasant, *Mills*, 1894, M. B. G. Herb. No. 75598;

Mount Pleasant, *Mills*, 1894, U. S. Herb. No. 952397;

Mount Pleasant, *Mills*, 1894, U. S. Herb. No. 952398;

Mount Pleasant, *Mills*, 1894, U. S. Herb. No. 952399;

Mount Pleasant, *Mills* 17, 1894, M. B. G. Herb. No. 75599;
Mount Pleasant, *Mills* 17, 1894, M. B. G. Herb. No. 75597.
Mount Pleasant, *Mills* 860, 1897;
Mount Pleasant, *Mills* 860, August, 1897, M. B. G. Herb. No. 75596;
Mount Pleasant, *Mills* 860, August, 1897, M. B. G. Herb. No. 75600;
Mount Pleasant, *Mills* 860, August, 1897, M. B. G. Herb. No. 75600;
Mount Pleasant, *Mills* 860, August ,1897, M. B. G. Herb. No. 75663;
Muscatine, *Reppert*, September 6, 1887, M. B. G. Herb. No. 75616;
Sheldahl and Slater, *Pammel* 1465, September 17, 1898, M. B. G. Herb. No. 75591;
Turin, *Pammel*, September 8, 1894, U. S. Herb. No. 746124.

MINNESOTA:
Detroit, *Seymour*, August 22, 1884, U. S. A. Herb.;
Fort Snelling, *Mearns* 771, August 31, 1891, U. S. Herb. No. 952391;
Houston County, *Freiburg*, July, 1912, M. B. G. Herb. No. 763870;
St. Cloud, *Campbell* 1877, U. S. Herb. No. 952393.

KANSAS:
Cullison, *Norris* 218, September, 1887, M. B. G. Herb. No. 79833;
Manhattan, *Hitchcock* 3836, September 27, 1908, U. S. A. Herb. No. 952402;
Manhattan, *Hitchcock* 3836, September 27, 1908, U. S. A. Herb.
Manhattan, *Hitchcock* 3844, September 27, 1908, U. S. Herb. No. 952403;
Manhattan, *Norton*, October 11, 1892, M. B. G. Herb. No. 75608;
Manhattan, *Novigh*, October 2, 1887, M. B. G. Herb. No. 75609;
McFarland, *Hitchcock* 7831, October 17, 1910, U. S. Herb. No. 952400;
Riley County, *Norton* 592a, September 9, 1895, M. B. G. Herb. No. 75614;

Riley County, *Norton* 597a, September 9, 1895, U. S. Herb. No. 353373;

Rockport, *Bartholomew*, September 12, 1889, M. B. G. Herb. No.4767491.

NEBRASKA:

Omaha, *Eastman*, September 14, 1915, U. S. A. Herb.

SOUTH DAKOTA:

Oak Lake, *Griffiths* and *Schlosser* August, 1892, U. S. Herb. No. 210915;

Pearl Creek, *Thornber*, August 15, 1894, M. B. G. Herb. No. 75659;

Sioux Falls, *Thornber* August ,1882, M. B. G. Herb. No. 75632;

Trent, *Ball* and *Ball*, September 26, 1903, U. S. Herb. No. 952395.

NORTH DAKOTA:

Fargo, *Waldron*; August 14, 1890, U. S. Herb. No. 952396;

Fargo, *Waldron* and *Moons*, August 20, 1901, U. S. Herb. No. 406356;

Pembina, *Havard* 3, date not given, U. S. Herb. No. 152896.

ALABAMA:

Without definite locality, *Buckley*, September, 1841, M. B. G. Herb. No. 79664.

ARKANSAS:

Fulton, *Bush* 980, September 19, 1900, M. B. G. Herb. No. 75588.

OKLAHOMA:

Ottawa, *Stevens* 2458, August 27, 1913, U. S. A. Herb.;

Sapulpa, *Bush* 772, September 21, 1894, M. B. G. Herb. No. 75610;

Sapulpa, *Bush* 1396, September 27, 1895, M. B. G. Herb. No. 75612;

Stillwater, *Waugh*, September 6, 1893, M. B. G. Herb. No. 75611;

Stillwater, *Waugh* 2146, September 27, 1893, M. B. G. Herb. No. 75613.

TEXAS:

Dallas, *Reverchon* 1054, October 1880, U. S. Herb. No. 822932, labelled M. MEXICANA FILIFORMIS by Reverchon, and M. FOLIOSA AMBIGUA by Hitchcock.

Dallas, *Reverchon* 2330, date not given, M. B. G. Herb. No. 82679;

Dallas, *Reverchon* 2330, date not given, M. B. G. Herb No. 75538;

Dallas, *Reverchon* 2330, date not given, M. B. G. Herb No. 75568;

Granbury, *Reverchon* 4110, September 7, 1903, M. B. G. Herb. No. 75664;

Without definite locality, *Reverchon* 1054, date not given, M. B. G. Herb. No. 75661.

10. MUHLENBERGIA FOLIOSA Trin. Gram. Unifl. 190. 1824.

Agrostis filiformis Willd. Enum. Hort. Berol. 1: 95. 1809, *Agrostis filiformis* Sprengel 1802.

Agrostis foliosa hortulana R. &. S. 2: 373. 1817.

Agrostis filiformis Muhl. Gram. 66. 1817, not *Agrostis filiformis* Sprengel 1802.

Trichochloa Coliosa Trin. Fund. Agrost. 117. 1820.

Cinna filiformis (Willd.) Link, Enum. Mort. Berol. 1: 70. 1821.

Agrostis lateriflora filiformis (Willd.) Torr. Fl. 1: 86. 1824.

Muhlenbergia Mexicana filiformis (Willd.) Scribner, Mem. Torr. Club 5: 36. 1894.

Muhlenbergia Mexicana of American authors in large part, not Trinius 1824.

Muhlenbergia Mexicana Nash in part in Illustrated Flora, not of Trinins 1824.

Muhlenbergia ambigua Hitchcock in part in Manual, not M. AMBIGUA Torrey 1843.

Me. to Ont. S. Dak. and southward, Hitchcock in Manual. Not recognized by Nash in Flora.

Not recognized by Nash in Illustrated Flora.

Maine and Quebec, westward to North Dakota and Wyoming, southward to North Carolina and Arizona.

SPECIMENS EXAMINED:

MAINE:

Auburn, *Merrill* 13, August, 1898, U. S. Herb. No. 952483;

Bangor, *Knight* 3, August 7, 1904, U. S. Herb. No. 952474;

Bradley, *Briggs* 10, September, 1891, U. S. Herb. No. 952479;

Brownfield, *Merrill* 18, August 24, 1896, U. S. Herb. No. 952484;

Cumberland, *Chamberlain* 453, September 6, 1902, U. S. Herb. No. 746194;
Dover, *Fernald* 526, September, 1891, U. S. Herb. No. 952480;
Foxcraft, *Fernald* 523, September 5, 1894, U. S. Herb. No. 952482;
Foxcraft, *Fernald* 523, September 5, 1894, U. S. Herb. No. 952482;
Madison, *Fernald* 529, August 1, 1892, U. S. Herb. No. 952481;
Orono, *Fernald* 524 September 13, 1890, U. S. Herb. No. 952473;
Orono, *Harvey* and *Harvey* 1270, June 1890, U. S. Herb. No. 952511;
St. Francis, *Fernald* 170, August 18, 1893, M. B. G. Herb. No. 75630;
St. Francis, *Fernald* 170, August 18, 1893, U. S. Herb. No. 204116;
St. Francis, *Fernald* 170, August 18, 1893, U. S. Herb. No. 822926.

QUEBEC:

Montreal, *Mohr*, August 10, 1883, U. S. Herb. No. 722799.

NEW HAMPSHIRE:

Manchester, *Batchelder* September 25, 1910, U. S. Herb. No. 952476;
Peterboro, *Deane* and *Batchelder*, August 30, 1910, U. S. Herb. No. 952476;
Peterboro, *Deane* and *Batcheldr*, August 30, 1910, U. S. Herb. No. 952477;
Wolfsborough, *Conant*, September, 1881, U. S. Herb. No. 952475.

VERMONT:

Burlington, *Jones* 1678, September 8, 1892, U. S. Herb. No. 647813;
Rutland, *Kirk* 1032, August 15, 1913, U. S. Herb. No. 725801;
Rutland, *Kirk* 1033, August 15, 1913, U. S. Herb. No. 725802.

MASSACHUSETTS:

Essex County, *Conant*, 1879, U. S. Herb. No. 952472;
Framingham, *Smith*, September, 1894, M. B. G. Herb. No. 79914;
South Hadley, *Cook*, 1887, U. S. Herb. No. 277074;

Southampton, collector and date not given, M. B. G. Herb. No. 785517.

RHODE ISLAND:

Limestone Rock, *Greenman* 2528, October 2, 1910, M. B. G. Herb. No. 740428.

Providence, *Olney* September, U. S. Herb. No. 852471.

NEW YORK:

Hinckley, *Mabeur* 3348, August 7, 1911, U. S. Herb. No. 952469;

Ithaca, collector not given, October 26, 1892, M. B. G. Herb. No. 75643;

Ithaca, collector not given, August 25, 1893, M. B. G. Herb. No. 75644;

Ithaca, *Rowles*, September 4, 1894, U. S. Herb. No. 952468;

Lake George, *Vasey* 1882, U. S. Herb. No. 952452;

Lebanon Springs, *Harrison*, September 19, 1890, U. S. Herb. No. 952470;

Oxford, *Coville*, September 11, 1885, U. S. Herb. No. 295252;

Pennyan, collector and date not given, but probably *Sartwell*, M. B. G. Herb. No. 75606;

Wayne County, *Mankensen*, October 8, 1869, U. S. Herb. No. 822927;

Western New York, *Gray*, date not given, M. B. G. Herb. No. 75643;

Western New York, *Gray*, date not given, M. B. G. Herb. No. 75623;

Western New York, *Gray*, date not given, M. B. G. Herb. No. 75627.

CANADA:

Without definite locality, *Shepard* date not given, M. B. G. Herb. No. 75628.

ONTARIO:

Birch Island, *Macoun* 26246, U. S. Herb. No. 952486;

Gault, *Herriott* 83, September 6, 1901, U. S. Herb. No. 952490;

Gault, *Merriott*, September 5, 1898, U. S. Herb. No. 952489;

Johnstone's Harbor, *Macoun* 26248, U. S. Herb. No. 952487;

Point Edward, *Macoun* 26247, U. S. Herb. No. 952485;

Point Pelee, *Dodge* 19, September 17, 1911, U. S. Herb. No. 952491;

Rockcliffe, *Macoun* 86177, August 10, 1911, M. B. G. Herb. No. 744523.

The Missouri Muhlenbergias.---IV.

BY BENJAMIN FRANKLIN BUSH.

NEW JERSEY:

Califon, *Fisher*, September 7, 1897, U. S. Herb. No. 952450;
Califon, *Fisher*, September 7, 1897, U. S. Herb. No. 647188;
Califon, *Fisher*, September 7, 1897, U. S. Herb. No. 733809;
Cranberry Lake, *Mackenzie* 2434, September 16, 1906;
Sussex County, *Mackenzie* 2434, September 16, 1906, M. B. G. Herb. No. 75667.

PENNSYLVANIA:

Dillerville, *Porter*, September 16, 1859, U. S. Herb. No. 952451;
Lancaster, *Small*, September 24, 1889, U. S. Herb. No. 746186.

MARYLAND:

Garrett County, *Donnell-Smith*, September 26, 1879, U. S. Herb. No. 822931;
Garrett County, *Donnell-Smith*, September 26, 1879, U. S. Herb. No. 822932.

VIRGINIA:

Luray, *Steele* and *Steele* 125, U. S. Herb. No. 418475;
Luray, *Steele* and *Steele* 125, M. B. G. Herb. No. 75586.

INDIANA:

Lafayette, *Dorner* 68, September 7, 1902, U. S. Herb. No. 952461;
Miller's, *Chase* 662, September 21, 1897, U. S. Herb. No. 746119;
Miller's, *Umbach* 5119, October 2, 1909, U. S. Herb. No. 952458;
Pine, *Umbach* 5073, September 18, 1909, U. S. Herb. No. 952459;

Pages 81–97, Am. Mid. Nat., Vol. VI., No. 6, November, 1919.

Pine, *Umbach*, September 13, 1897, U. S. Herb. No. 351222;
Tolleston, *Chase* 334, September 23, 1898, U. S. Herb. No. 746120;
Tolleston, *Chase* 334, September 23, 1898, U. Ill. Herb.;
Tolleston, *Chase* 334, September 23, 1898, M. B. G. Herb. No. 75590;
Wells County, *Deam*, September 15, 1901, U. S. Herb. No. 952460.

KENTUCKY:

Without definite locality, *Short*, 1840, M. B. G. Herb. No. 75649.

ILLINOIS:

Algonquin, *Nason*, August 27, 1879, U. S. A. Herb.;
Apple River, *Pepoon* 611, August 18, 1908, U. Ill. Herb.;
Athens, *Hall* 1888, U. S. Herb. No. 952505;
Champaign County, *Burrill*, October, 1871, U. Ill. Herb.;
Joliet, *Skeels* 553, September 28, 1904, U. S. Herb. No. 952462;
Joliet, *Skeels* 553, September 28, 1904, U. S. Herb. No. 746122;
Joliet, *Skeels* 553, September 28, 1904, U. S. Herb. No. 646206;
Lewistown, *Pepoon*, August 1890, M. B. G. Herb. No. 767489;
Oregon, *Waite*, August 17, 1885, U. S. Herb. No. 490959;
Rockford, *Bebb*, date not given, U. S. Herb. No. 952453;
Without definite locality, *Ball*, date not given, U. S. Herb. No. 682507;
Without definite locality, *Gandoger*, 1904, M. B. G. Herb. No. 713648;
Without definite locality, *Wolf*, 1880, U. S. Herb. No. 952457;
Without definite locality, *Wolf*, 1881, U. S. Herb. No. 952455;
Without definite locality, *Wolf*, date not given, U. S. Herb. No. 952456.

NORTH CAROLINA:

Buncombe County, *Biltmore Herbarium* 657a, U. S. Herb. No. 335375.

MICHIGAN:

Cassville, *Dodge*, September 9, 1910, U. S. Herb. No. 952467;
Grindstone City, *Dodge*, September 1, 1912, U. S. Herb. No. 730523;
Imlay City, *Palmer*, September, 1880, U. S. Herb. No. 952465;
Port Austin, *Ball*, September 20, 1902, U. S. Herb. No. 952466.

IOWA:

Ames, *Ball* 115, August 5, 1896, M. B. G. Herb. No. 75618;
Ames, *Pammel* 114, August 8, 1896, M. B. G. Herb. No. 75617;
Clinton, *Pammel* 251, September 4, 1896, M. B. G. Herb. No. 75619;
Iowa City, *Hitchcock*, 1888, M. B. G. Herb. No. 75585;
Muscatine County, *Pammel* and *Reppert*, 1861, September 10, 1898, M. B. G. Herb. No. 79770;
Sheldahl, *Pammel*, *Hume* and *Sample* 1422, M. B. G. Herb. No. 75992;
Sheldahl, *Pammel*, *Hume* and *Sample* 1422, M. B. G. Herb. No. 75594.

WISCONSIN:

Left Foot Lake, *Schuette*, August 31, 1883, U. S. Herb. No. 751731;
Milwaukee, *Chase* 1948, August 11, 1902, U. S. Herb. No. 746118;
Williams Bay, *Umbach* 4696, September 2, 1909, U. S. Herb. No. 952460;
Williams Bay, *Umbach* 4721, September 3, 1909, U. S. Herb. No. 952463.

MINNESOTA:

Battle Lake, *Sheldon*, August, 1892, U. S. Herb. No. 952444;
Fergus Falls, *Sheldon*, August, 1892, U. S. Herb No. 952445;
Fort Snelling, *Mearns* 794, September 13, 1891, U. S. Herb. No. 952443;
Groveland, *Oswald*, 1911, U. S. Herb. No. 730775.

KANSAS:

Kingman County, *Carleton* 549, September 30, 1891, U. S. Herb. No. 952442;
Riley County, *Norton* 597, August 18, 1895, M. B. G. Herb. No. 75615.

NEBRASKA:

Big Sandy Creek, *Clements* 2848, August 9, 1893, U. S. Herb. No. 221806;
Central Nebraska, *Rydberg* 1686, August 12, 1893, M. B. G. Herb. No. 75636;
Natteck, *Rydberg* 1756, September 11, 1893, U. S. Herb. No. 208268;

Natteck, *Rydberg* 1764, September 13, 1893, U. S. Herb. No. 208267;

South Fork of Dismal River, *Rydberg* 1686, August 12, 1893, U. S. Herb. No. 208269;

Talmage, *Elmore* 92, August 6, 1896, U. S. Herb. No. 952441;

Thedford, *Rydberg* 1704, August 19, 1893, U. S. Herb. No. 208266.

South Dakota:

Bear Creek, *Over* 2335, September 1, 1913, U. S. Herb. No. 693343;

Mill City, *Griffiths* 723, August 27, 1897, U. S. Herb. No. 952448;

Huron, *Griffiths* 6, August 25, 1896, U. S. Herb. No. 952449.

North Dakota:

Devil's Lake, *Hitchcock* 5061, U. S. Herb. No. 952447;

Devil's River, *Hitchcock* 5061, U. Ill. Herb.

Manitoba:

Elm Park, *Macoun* 13213, August 11, 1896, U. S. Herb. No. 952488.

Mississippi:

Starkville, *Tracy* June 21, 1892, U. S. Herb. No. 952495.

New Mexico:

Socono County, *Metcalfe* 359, August 3, 1903, M. B. G. Herb. No. 75637;

Socono County, *Metcalfe* 359, August 3, 1903, U. S. Herb. No. 952494;

Socono County, *Metcalfe* 359, August 3, 1903, U. S. Herb. No. 495426;

Without definite locality, *Fendler* 764, M. B. G. Herb. No. 79687.

Colorado:

Denver, *Ward*, August 19, 1891, U. S. Herb. No. 152895.

Wyoming:

Tower, *Griffiths* 521, August 12, 1897, U. S. Herb. No. 952493.

Arizona:

Wilgus Creek, *Blumer* 1784, October 12, 1907, M. B. G. Herb. No. 75660;

Wilgus Creek, *Blumer*, October 20, 1907, U. S. Herb. No. 952491.

11. Muhlenbergia Torreyi (Kunth) Hitchcock, ined.

Agrostis diffusa Muhl. Gram. 64. 1817, not *Agrostis diffusa* Host. 1809.

Agrostis sylvatica Torr. Fl. U. S. 1: 87. 1824, not *Agrostis sylvatica* L. 1763.

Agrostis Torreyi Kunth. Enum. Pl. I: 226. 1838, replacing *Agrostis sylvatica* Torrey.

Muhlenbergia sylvatica (Torr.) Torr. Cat. Pl. N. Y. State, 188. 1840.

Muhlenbergia sylvatica gracilis Scribner, grans. scans. Acad. Sci. 9: 116. 1885, not *N. gracilis* Kanth, 1829.

Muhlenbergia umbrosa Scribner, Rhodora 9: 20. 1907.

Muhlenbergia umbrosa attenuata Scribner, Rhodora 9: 21. 1907.

Muhlenbergia sylvatica T & G., Bush in Flora of Jackson County, Missouri, No. 861, 1885; Tracy in Flora of Missouri No. 1646, 1886; Eggert in Catalogue of Plants of Saint Louis, Missouri, 1891; Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, No. 7, 1902; Daniels in Flora of Columbia, Missouri, No. 73, 1907.

Muhlenbergia sylvatica Torr., Palmer in Catalogue of Plants of Jasper County, Missouri, Nos. 218 and 3187. 1916.

Me. to Dak. and southward to Missouri and Kansas, according to Scribner, l. c.

N. B. to Ont. Ia. and southward, Hitchcock in Manual.

N. B. to Ont. Minn. N. Car. Tenn. Nebr. and the Ind. Terr., Nash in Flora.

Maine to Minnesota, south to Arizona, Virginia and Texas.

SPECIMENS EXAMINED:

MAINE:

Dover, *Fernald* 528, September 3, 1894, U. S. Herb. No. 952428;

Moscow, *Chamberlain*, August 29, 1902, U. S. Herb. No. 491269;

Orono, *Knight*, September 17, 1905;

St. Francis, *Fernald* 171, August 15, 1893, M. B. G. Herb. No. 79617.

MASSACHUSETTS:

Essex County, *Conant*, August ,1880, U. S. Herb. No. 952429;

Essex County, *Conant*, 1880, U. S. Herb. No. 952430;

South Hadley, *Cook* 1887, U. S. Herb. No. 277075;

Without definite locality, *Chapman*, date not given, M. B. G. Herb. No. 785595.

CONNECTICUT:

Windsor, *Bissell*, September 16, 1906, U. S. Herb. No. 952431.

NEW YORK:

Bergen, collector not given, August, 1887, U. Ill. Herb.;
Ithaca, collector not given, August 25, 1893, M. B. G. Herb. No. 79737;
Lake George, *Vasey*, 1882, U. S. Herb. No. 952432;
Lake George, *Vasey*, 1882, U. S. Herb. No. 952433;
North Hannibal, *Pearce*, September 13, 1883, U. S. Herb. No. 152900;
Pennyan, *Sartwell*, date not given, M. B. G. Herb. No. 79625,
Wayne County, *Mackenzen*, September 16, 1870, U. S. Herb. No. 822959.

NEW JERSEY:

Hoboken, collector and date not given, M. B. G. Herb. No. 79654;
Hoboken, collector and date not given, M. B. G. Herb. No. 79626;
Stockholm, *Van Sickle*, August 1, 1895, U. S. Herb. No. 244234.

PENNSYLVANIA:

Germantown, *Digyn*, date not given, M. B. G. Herb. No. 79584;
Philadelphia, *Smith* 85, date not given, U. S. Herb. No. 552434;
Quakertown, *Moyer*, August, 1877, U. S. A. Herb.;
Without definite locality, *McMinn*, date not given, U. S. Herb. No. 952435.

MARYLAND:

Bradley Heights, *Chase* 6859, U. Ill Herb.

OHIO:

Milan, *Moseley*, August 27, 1894, M. B. G. Herb. No. 79588.

VIRGINIA:

Sweet Springs, *Steele* 298, September 12, 1903, M. B. G. Herb. No. 79743.

WEST VIRGINIA:

Goose Creek, *Donnell-Smith*, September 12, 1879, U. S. Herb. No. 822961;

Goose Creek, *Donnell-Smith*, September 12, 1879, U. S. Herb. No. 822961;
Sweet Springs, *Steele* and *Steele*, 298, September 12, 1903, U. S. Herb. No. 490276.

TENNESSEE:
Cocke County, *Kearney*, September 1, 1897, U. S. Herb. No. 952427;
Knoxville, *Ruth* 3, date not given, U. S. Herb. No. 952426;
Suwanee, *Eggert*, September 10, 1898, M. B. G. Herb. No. 79721;
Suwanee, *Eggert*, September 10, 1898, M. B. G. Herb. No. 79734.

ILLINOIS:
Athens, *Hall*, September, 1874, U. S. Herb. No. 952436;
Beardstown, *Geyer*, 1842, M. B. G. Herb. No. 79661;
Bluffs Lake, *Eggert*, September 24, 1875, M. B. G. Herb. No. 79735;
Edgemont, *Craig*, October 23, 1910, M. B. G. Herb. No. 82663;
Menard County, *Hall*, date not given, U. Ill. Herb.;
Mount Carroll, *Shimek*, October, 1891, U. S. Herb. No. 952438;
Oquawka, *Patterson*, September, 1898, M. B. G. Herb. No. 75662;
Peoria, *Brendel*, date not given, U. Ill. Herb.;
Peoria, *Brendel*, date not given, U. Ill. Herb.;
Peoria, *Brendel*, date not given, U. Ill. Herb.;
Princeville, *Chase* 941, October 14, 1900, M. B. G. Herb. No. 79747;
Princeville, *Chase* 941, October 14, 1900, U. S. Herb. No. 746215;
Taylorville, *Andrews*, August 24, 1898, U. Ill. Herb.;
Taylorville, *Andrews*, August 26, 1898, U. Ill. Herb.;
Taylorville, *Andrews*, August 27, 1898, U. Ill. Herb.;
Taylorville, *Andrews*, August 28, 1898, U. Ill. Herb.;
Taylorville, *Andrews*, September 10, 1898, U. Ill. Herb.;
Taylorville, *Andrews*, September 12, 1898, U. Ill. Herb.;
Urbana, *Gibbs*, September, 1898, U. Ill. Herb.;
Wabash County, *Schneck*, September 4, 1900, U. Ill. Herb.;

Without definite locality, *Andrews*, date not given, U. Ill. Herb.;

Without definite locality, *Engelmann*, date not given, M. B. G. Herb. No. 79660, in part the plant marked 3 on this sheet, but as there are 3 distinct species on this sheet, and 3 labels, it is impossible to tell which plants the labels belong to;

Without definite locality, *Wolf* 318, date not given, U. Ill. Herb.;

Without definite locality, *Wolf* 1882, U. S. Herb. No. 952437.

Missouri:

Aberdeen, *Davis*, September 24, 1911, U. S. Herb. No. 673648;

Allenton, *Letterman*, August, 1876, M. B. G. Herb. No. 772799;

Allenton, *Letterman*, September, 1892, M. B. G. Herb. No. 772902.

Bagnell, *Trelease*, September 22, 1897, M. B. G. Herb. No. 79742;

Carthage, *Palmer* 218, September 7, 1902, M. B. G. Herb. No. 756905;

Cliff Cave, *Norton*, August 26, 1899, M. B. G. Herb. No. 82694;

Columbia, *Tracy*, August 11, 1884, M. B. G. Herb. No. 79736;

Creve Coeur Lake, *Kellogg* 26, September 25, 1901, U. S. Herb. No. 950192;

Creve Coeur Lake, *Kellogg* 27, September 25, 1901, U. S. Herb. No. 750194;

Creve Coeur Lake, *Kellogg*, September 25, 1901, M. B. G. Herb. No. 79799;

Dodson, *Mackenzie*, September 26, 1896;

Gates, *Standley*, 9382, August 26, 1912, U. S. Herb. No. 688298, in part, the plant marked B on this sheet;

Ironton, *Russell*, August, 1897, M. B. G. Herb. No. 79723;

Jackson County, *Bush*, September 27, 1893, M. B. G. Herb. No. 80039;

Jefferson Barracks, *Eggert*, September 4, 1877, M. B. G. Herb. No. 767490;

Jefferson Barracks, *Eggert*, September 4, 1877, M. B. G. Herb. No. 79730;

Jefferson Barracks, *Eggert*, September 4, 1877, M. B. G. Herb. No. 739938;
Jefferson Barracks, *Eggert*, September 4, 1877, M. B. G. Herb. No. 79731;
Jefferson Barracks, *Eggert*, September 4, 1877, M. B. G. Herb. No. 739938;
Jefferson Barracks, *Eggert*, September 4, 1877, M. B. G. Herb. No. 79839;
Jefferson Barracks, *Eggert*, September 4, 1877, N. D. Herb. No. 8388;
Monteer, *Bush* 4887, October 10, 1907, M. B. G. Herb. No. 79832;
Monteer, *Bush*,4887, October 10, 1907;
Sarcoxie, *Palmer* 3187, September 18, 1910, M. B. G. Herb. No. 757392;
Sarcoxie, *Palmer* 3187, September 18, 1910, M. B. G. Herb. No. 79804;
Sibley, *Bush* 4822, August 21, 1907, M. B. G. Herb. No. 79829;
Sibley, *Bush* 4822, August 21, 1907, U. S. Herb. No. 590886;
Sibley, *Mackenzie* 548, October 2, 1901;
Springfield, *Standley* 8546, August 31, 1911, U. S. Herb. No. 687497;
St. Louis, *Eggert* 226, August 3, 1877, U. S. Herb. No. 950193;
Swan, *Bush* 603, September 28, 1899, U. S. Herb. No. 362266;
Swope Park, *Mackenzie* 427, September 13, 1901;
Terre Bleue Creek, *Trelease*, August 30, 1898, M. B. G. Herb. No. 79745.

MICHIGAN:

Lapeer, *Dodge* 18, August 17, 1911, U. S. Herb. No. 952439.

IOWA:

Ames, *Bessey* October 18, 1872, M. B. G. Herb. No. 79748;
Clinton, *Pammel* 250, September 4, 1896, M. B. G. Herb. No. 79616;
Clinton, *Pammel* 250, September 4, 1896, U. S. Herb. No. 294631;
Dakota City, *Pammel* 111, August 8, 1896, M. B. G. Herb. No. 79727;
Dakota City, *Pammel* 111, June 29, 1886, U. S. Herb. No. 952440;

Fayette County, *Fink* 461, August, 1894, U. S. Herb. No. 230547.

MINNESOTA:

St. Anthony Park, *Oswald*, 1911, U. S. Herb. No. 730777.

KANSAS:

Manhattan, *Hitchcock*, October 21, 1892, M. B. G. Herb. No. 79614;

Manhattan, *Kellerman*, 1888, U. S. Herb. No. 228628;

McFarland, *Hitchcock* 7832, October 17, 1910, U. S. Herb. No. 952401;

Riley County, *Norton* 598, September 28, 1895, M. B. G. Herb. No. 79614;

Riley County, *Norton* 598, September 28, 1895, M. B. G. Herb. No. 353374.

NEBRASKA:

Red Cloud, *Bates*, September 13, 1906, U. S. Herb. No. 559653.

ARKANSAS:

Benton County, *Plank* 60, date not given, U. S. Herb. No. 952425;

Benton County, *Plank*, Summer, 1900, M. B. G. Herb. No. 82686;

Benton County, *Plank*, Summer, 1900, M. B. G. Herb. No. 82687;

Benton County, *Plank*, Summer, 1900, M. B. G. Herb. No. 82678.

TEXAS:

Dallas County, *Reverchon* 1050, September, 1873, M. B. G. Herb. No. 80080;

Without definite locality, *Nealley* 403, 1889, U. S. Herb. No. 952424, labeled *M. umbrosa* by Scribner;

Without definite locality, *Nealley*, 1890, U. S. Herb. No. 952414;

Without definite locality, *Reverchon*, date not given, M. B. G. Herb. No. 80114;

Without definite locality, *Reverchon*, date not given, M. B. G. Herb. No. 80115;

Without definite locality, *Reverchon*, date not given, M. B. G. Herb. No. 80116;

Without definite locality, *Reverchon* 31, 1885, U. S. Herb. No.

952423, labeled *M. sylvatica* var.—and *M. Willdenovii by* Scribner;

Without definite locality, *Reverchon* 71, U. S. Herb. No. 952413, labeled *M. sylvatica* and *M. sobolifera* by Scribner, and *M. Mexicana* by Hitchcock.

ARIZONA:

Grapevine Cañon, *Toumey* 168, July 30, 1891, U. S. Herb. No. 952422;

Without definite locality, *McDougal*, 1891, U. S. Herb. No. 952421.

12. MUHLENBERGIA POLYSTACHYA Mackenzie and Bush, Manual of the Flora of Jackson County, Missouri, 23, 1902.

Muhlenbergia Mexicana Scribner, l. c., in part, not *M. Mexicana* Trin, 1824.

Muhlenbergia Mexicana Hitchcock in Manual in part, not *M. Mexicana* Trin. 1824.

Not mentioned by Nash in the Illustrated Flora. Missouri and Illinois to Wisconsin.

This species has been neglected or misunderstood since it was first described, and in order that my readers may see how very different it is from *M. Mexicana*, to which it has been referred by two agrostologists, I herewith present the original description;

M. POLYSTACHYA Mackenzie & Bush, n. sp. 2 feet high, erect, much branched; leaves 1 1-2 inches to 2 1-2 inches long, 1 line to 2 lines wide; panicles on peduncles 1 inch to 5 inches long, long-exserted, densely flowered, the lower branches separated; flowers nearly sessile, 1 line long; the glames as in the last (*M. Mexicana*); hairs at base of flowering glume copious, 1-3 to 1-2 length of glume. Open rocky woods east of Sibley. August-October.

SPECIMENS EXAMINED:

MISSOURI:

Sibley, *Bush*, October 14, 1901;

Sibley, *Bush* 4171, October 10, 1906, U. S. Herb. No. 950396, with lemmas awned;

Sibley, *Mackenzie* 637, October 14, 1901, TYPE.

ILLINOIS:

Fulton County, *Wolf*, date not given, U. S. Herb. No. 952504;

Urbana, collector not given, 1876, U. Ill. Herb.;

Wady Petra, *Chase* 1268, September 23, 1906, U. S. A. Herb.;

Wady Petra, *Chase* 1268, September 23, 1906, U. S. Herb. No. 952454.

WISCONSIN:

Ashland, *Hitchcock* 5095, September 27, U. S. Herb. No. 952500;

Without definite locality, *Wood*, 1887, U. S. Herb. No. 952501;

Without definite locality, *Wood*, 1887, U. S. Herb. No. 952502.

13. MUHLENBERGIA CUSPIDATA (Torr.) Rydberg, Bull. Torr. Club, 32: 599. 1905.

Vilfa cuspidata Torr.; Hook. Fl. Bov. Am. 2: 238. 1840.

Sporobolus cuspidatus (Torr.) Wood, Bot. & Fl. 385. 1870.

Sporobolus brevifolius Scribner, Mem. Torr. Club. 5: 39, 1894, in small part, not *Agrostis brevifolia* Nuttall 1818, nor *Muhlenbergia brevifolia* (Nutt.) Nash.

Sporobolus cuspidatus (Torr.) Wood, Mackenzie and Bush in Manual of the Flora of Jackson County, Missouri, No. 4. 1902; Daniels in Flora of Columbia, Missouri, No. 81, 1907, but very doubtful, as this species is not known to get as far east in Missouri. Dr. Daniels has omitted several very common species of *Sporobolus* from his Flora, and I suspect that one of these has been mistaken for *M. cuspidata*.

Wisc. to Mo. and southward, Hitchcock in Manual.

Mani. to the N. W. Terr. south to Mo. and Kans., Nash in Flora.

Mani. to Alberta, south to Mo. and Kans., Nash in Illustrated Flora.

Manitoba to Wisconsin, Northern Illinois, Missouri and Colorado.

SPECIMENS EXAMINED:

ALBERTA:

Calgary, *Hitchcock* 4977, September 19-22, 1909, U. Ill. Herb.

NORTH DAKOTA:

Leeds, *Lunell*, August 20, 1906, U. Ill. Herb.

WISCONSIN:

St. Peter's River, *Thurber*, date not given, U. Ill. Herb. No. 79663.

IOWA:

Ames, *Hitchcock*, date not given M. B. G. Herb. No. 79630.

ILLINOIS:

Joliet, *Hill* 185, September 6, 1906, U. Ill. Herb.;

Joliet, *Hill* 185, October 9, 1906, U. Ill. Herb.;

Will County, *Hill*, August 16, 1912, U. S. Herb. No. 950191, all these Illinois collections a notable eastern extension of the range of this species.

MISSOURI:

Atchison County, *Bush* 4233, August 5, 1893, U. S. Herb. No. 950190;

Cockrell, *Bush* 6479, September 23, 1911, U. S. Herb. No. 673563;

Greenwood, *Bush* 4125, September 19, 1906, U. S. Herb. No. 590408;

Jackson County, *Bush* 1879, August 24, 1891, M. B. G. Herb. No. 80043;

Watson, *Bush* 783, October 1, 1895, U. Ill. Herb.

KANSAS:

Decatur County, collector and date not given, M. B. G. Herb. No. 79631;

Riley County, *Norton* 595, July 26, 1895, M. B. G. Herb. No. 79635.

COLORADO:

Fort Collins, *Ball*, August 8, 1898, M. B. G. Herb. No. 82684.

NEW MEXICO:

"Cross L" Ranch, *Griffiths* 5461, August 21-24, 1903, M. B. G. Herb. No. 79813;

"Cross L" Ranch, *Griffiths* 5518, August 21-24, 1903, M. B. G. Herb. No. 79814;

Raton Mountains, *Griffiths* 5461, August 18-19, 1903, M. B. G. Herb. No. 79815.

2. PODOSEMUM Desvaux, nouv. Bull. Soc. Philom. 2. 189. 1810. *Muhlenbergia* in large part of American Authors, not of Schreber, 1791.

A large genus of 40 species or more, natives of America, comprising those species with more or less open, large panicles, the branches of which are either drooping or spreading, pedicals slender or capillary, lemmas long-awned, or occasionally short-awned or awnless.[1] A single species occurs in our territory.

[1]The center of abundance of PODOSEMUM species seems to be in Western Texas, to which region *P. capillare* does not appear to extend, it being the center of a group of three species belonging to the South Atlantic region. In a subsequent paper I shall discuss some of the many allies of *P. capillare*.

1. PODOSEMUM CAPILLARE (Lamarck) Desv. Nouv. Bull. Soc. Philom. 2: 188. 1810.

Stipa capillaris Lam. Tabl. Encycl. 1: 158. 1791.

Muhlenbergia capillaris (Lam.) Trin. Gram. Unifl. 191. 1824.

Muhlenbergia filipes Chapman, Fl. S. U. S. 603, 1897, in part, not M. FILIPES M. A. Curtis, 1843.

Muhlenbergia capillaris Kunth, Tracy in Flora of Missouri, No. 1640, as from Boone County, Missouri, collected by Galloway, but not given by Daniels in his Flora of Columbia, Missouri, 1907, and no specimens known from north of the Missouri River.

Muhlenbergia capillaris (Lam.) Trin., Palmer in Catalogue Plants of Jasper County, Missouri, No. 2828, 1916.

Central Texas to Fla. and Va., according to Dewey in Manual of the Plants of Western Texas.

Mass. to Fla. west to Mo. and Texas, Hitchcock in Manual.

Mass. N. J. and Mo. to Fla. the Ind. Terr. and Texas, Nash in Flora.

Mass. to Kans. Fla. and Texas, Nash in Illustrated Flora.

New Jersey southward along the coast to Florida, west to Texas, aud in the interior to Tennessee, Kentucky, Illinois, Southern Missouri and Oklahoma, therefore being largely a coast species; no specimens have been seen from east of New Jersey or west of Eastern Texas.

SPECIMENS EXAMINED:

NEW JERSEY:

Atlantic County, *C. A. Gross*, September 3, 1897;

Millburn, *Mackenzie* 580, September 20, 1903;

Sussex County, *Mackenzie* 1121, September 25, 1904.

MARYLAND:

Glen Echo, *Steele*, September 25, 1904, U. S. A. Herb.;

Great Falls of the Potomac, *Ball* 72, September 4, 1899, M. B. G. Herb. No. 79791.

DISTRICT OF COLUMBIA:

Great Falls of the Potomac, *Holm*, October 13, 1898, M. B. G. Herb. No. 779209;

Washington, *Ward*, September, 1875, M. B. G. Herb. No. 75887.

VIRGINIA:

Bedford County, *Curtiss*, September, M. B. G. Herb. No. 772781;

Bedford County, *Curtiss*, September 1-20, 1873, M. B. G. Herb. No. 79774.

NORTH CAROLINA:

Biltmore, *Biltmore Herbarium* 656a, September 13, 1898, M. B. G. Herb. No. 79795;

Without definite locality, *Curtis*, date not given, M. B. G. Herb. No. 79651;

Without definite locality, *Curtis*, date not given, M. B. G. Herb. No. 80007.

GEORGIA:

Leslie, *Harper* 1723, October 8, 1902, M. B. G. Herb. No. 79786.

ALABAMA:

Mobile, *Mohr*, September, 1893, M. B. G. Herb. No. 79782.

FLORIDA:

Duval County, *Curtiss* 3401, September, M. B. G. Herb. No. 79775;

Gainesville, *Chase* 4269, September 30 to October 3, 1901, U. S. A. Herb.;

Jacksonville, *Curtiss* 3401, September, M. B. G. Herb. No. 80002;

Jacksonville, *Curtiss* 4049, October 6, 1893, M. B. G. Herb. No. 767219;

Jacksonville, *Curtiss* 4050, October 16, 1893, M. B. G. Herb. No. 767200;

Lake City, *Bitting* 785, September 8, 1892, M. B. G. Herb. No. 79796;

Lee County, *Gandoger*, September, 1900, M. B. G. Herb. No. 713891;

Sanibel, *Hitchcock* 466, July, August, 1900, M. B. G. Herb. No. 79789;

Without definite locality, collector and date not given, M. B. G. Herb. No. 79995;

MISSISSIPPI:

Biloxi, *Earle*, October 8, 1897, U. Ill. Herb.;

Biloxi, *Earle*, October 8, 1897, M. B. G. Herb. No. 79795;

Biloxi, *Tracy* 4637, October 4, 1898, M. B. G. Herb. No. 79794.

LOUISIANA:

Red River, *Hale*, date not given, M. B. G. Herb. No. 79601;
Without definite locality, *Hale*, date not given, M. B. G. Herb. No. 79699.

TENNESSEE:

Knoxville, *Ruth*, September, 1892, M. B. G. Herb. No. 773048;
Knoxville, *Ruth* October 6, 1894, M. B. G. Herb. No. 80093;
Knoxville, *Ruth*, October 6, 1894, U. Ill. Herb.;
Knoxville, *Ruth*, October, 1895, M. B. G. Herb. No. 79780;
Knoxville, *Ruth*, October, 1897;
Knoxville, *Ruth* 58, September, 1898, M. B. G. Herb. No. 79785;
Knoxville, *Ruth*, October, 1900;
Sharp Gap, *Ruth*, September, 1890, M. B. G. Herb. No. 773069.

KENTUCKY:

Without definite locality, collector and date not given, M. B. G. Herb. No. 79592.

ILLINOIS:

Union County, *Seymour*, 1881, U. Ill. Herb.

MISSOURI:

Eagle Rock, *Bush* 378, September 18, 1896, M. B. G. Herb. No. 80051;
Eagle Rock, *Bush* 378, September 18, 1896, M. B. G. Herb. No. 80118;
Eagle Rock, *Bush* 378, September 18, 1896, M. B. G. Herb. No. 294602;
Eagle Rock, *Mackenzie*, September 18, 1896;
Joplin, *Palmer* 2828, October 11, 1909, M. B. G. Herb. No. 756897;
Joplin, *Palmer* 2828, October 11, 1909, M. B. G. Herb. No. 756898;
McDonald County, *Bush*, September 1, 1893, M. B. G. Herb. No. 756898;
Monteer, *Bush* 5123, September 10, 1908, M. B. G. Herb. No. 756898;
Monteer, *Bush* 5123, September 10, 1908, M. B. G. Herb. No. 80057;

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Monteer, *Bush* 5123, September 10, 1908, M. B. G. Herb. No. 606505;

Swan, *Bush* 642, September 29, 1899, M. B. G. Herb. No. 79776;

OKLAHOMA:

Fonts, *Blankenship* August 28, 1895, M. B. G. Herb. No. 79784;

Sapulpa, *Bush* 767, September 20, 1894, M. B. G. Herb. No. 80003.

TEXAS:

Bowie County, *Eggert* August 27, 1898, M. B. G. Herb. No. 79781;

College Station, *Nealley*, date not given, M. B. G. Herb. No. 79890;

Columbia, *Bush* 1546, October 17, 1900, M. B. G. Herb. No. 79788;

Corsicana, *Reverchon* 3540, September 27, 1902, M. B. G. Herb. No. 79888;

Corsicana, *Reverchon* 3540, September 27, 1902, M. B. G. Herb. No. 79777;

Corsicana, *Reverchon* 3540, September 27, 1902, M. B. G. Herb. No. 79783;

Corsicana, *Reverchon* 3540, September 27, 1902;

Grand Saline, *Reverchon* 2253, October 18, 1900, M. B. G. Herb. No 79790;

Grand Saline, *Reverchon* 2253, October 18, 1900, M. B. G. Herb. No. 79779;

Grand Saline, *Reverchon* 2253, October 18, 1900, M. B. G. Herb. No. 80070;

Polytechnic, *Ruth* 268, October 2, 1911, M. B. G. Herb. No. 710101;

Sheldon, *Reverchon* 4109, September 6, 1903, M. B. G. Herb. No. 79778;

Sheldon, *Reverchon* 4109, September 6, 1903, M. B. G. Herb. No 79889;

Without definite locality, *Drummond* 344, date not given, M. B. G. Herb. No. 79994.

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